Guide to Creating the Light-Efficient Community

Nov. 9, 2012

'For so deeply have I loved the stars that night's vast darkness bears no fear."

Most people in western cultures have never seen a dark sky full of brilliant stars. They were born and live in towns and cities where streetlights and other outdoor lighting have robbed them of dark, star-filled nights. Thus, they have never developed a love of the stars nor experienced the spine-tingling awe and mystery that one feels when beholding a glittering night sky and its breathtaking beauty. Instead, they have developed a fear of the dark and light their houses, streets, alleys and parking lots. With ever increasing levels of light pollution, they are blinded to this incredible experience that has contributed so much to humanity's cultures throughout the ages.

However, new technologies, approaches, changes in values and environmental concerns have finally come together to create solutions that will give us back the stars.

The goal of your work will be to have your town or city council adopt a lighting policy which will see current streetlights changed to dark-sky approved, efficient, full cut-off LED lighting and other exterior lighting throughout the community changed to full cut-off lighting. These changes will seriously affect the amount of light pollution being created by the area's lighting and will drastically cut power bills for the community. However, it will do much more than that as it will improve health, safety, security, quality of life and the night environment.

This document is divided into the following sections:

A. Goals of This Document

This document was created to help you work with others in your town or city to create a ***Light-Efficient Community,*** a community which intelligently and effectively controls its outdoor lighting and protects the night environment for the experience and appreciation of all who desire it.

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.

This document will help you

- understand the development of street lighting
- understand how old-style street lighting has wasted and continues to waste incredible amounts of energy while providing unacceptable lighting
- understand how lighting can be changed to provide far more effective, efficient lighting provides better safety and security while reducing consumption and light waste
- be able to communicate effectively with others regarding light pollution
- learn how to save your community money wasted on bad lighting
- learn how to get your community involved
- learn how to support efforts of others in your community
- learn how to interest others in more effective, efficient lighting
- learn how to deal with concerns about lighting by others in your community
- learn how to protect the night environment
- learn how to interest your municipal councilors in making changes to the lighting
- learn how to keep the process going

B. Introduction

Almost as soon as technologically possible, people have been lighting their homes, streets and communities with gas and then electricity. Over the years, exterior lighting has spread like a cancer throughout the communities and the world as people have been told by power companies that such lighting makes for safer and more secure communities. Although this seems self-evident, we have found that the way our towns and cities have been lit is actually causing more problems than it is solving. This is now about to change.

Photographs and video of the world at night show the extent to which the lighting phenomenon has grown. These media have also shown us the extent of the waste of resources as the world, especially the developed world, has lit every community and is now lighting even major thoroughfares between communities.

The waste for an average city can extend to trillions of watts per year, with the costs for this waste born by taxpayers. In the U.S. the bill for this waste is estimated to amount to billions of dollars per year. For many communities **the** major cost in their budgets is the cost of power for lighting streets. Some communities have even decided to reduce the number of lights, shut them off in certain areas or eliminate them altogether to resolve the problems of lighting costs and energy waste. However, in most communities, electric lights and light/energy waste is still increasing due to increasing demand for light at night and poor choices of lighting fixtures in all areas of outdoor lighting.

Though many individuals and even some organizations have complained over the years about the increasing amount of wasted light, these complaints about light pollution have had little effect on communities or their councils. However, the elements necessary to solve this problem are now available.

Until recently, street lighting technology has consisted of a bulb in a 'luminaire' spreading light far and wide throughout the community. Over the years, street lighting has changed from the simple incandescent bulb on every street corner to an increasing number of light poles located along each street and down back alleys. As a result, the amount of wasted light increased as well. Old style lighting fixtures were not designed for efficiency and spewed light far beyond the range of the streets and sidewalks, soaking the community in light that was mainly unwanted. Old fixtures also threw light up into the night sky, wasting more energy and creating glare and light trespass galore. Towns and cities could be seen at night from great distances, their golden light domes indicating their position while they polluted the night environment for hundreds of kilometers in all directions.

The incandescent bulb has been gradually replaced by the mercury vapor light and in turn by sodium high pressure and low pressure bulbs. The bulbs, gradually improving in efficiency with different generations, continued to be housed in luminaires which changed little over time. The older, inefficient 'cobra head' luminaires were found everywhere and are gradually being replaced by 'sag lens' luminaires and in some cases, even by 'flat lens' or 'full cut-off' luminaires which are more efficient.

However, lighting technologies have made major strides with the invention and adaptation of light-emitting diodes (LED's). This new type of lighting has several advantages; it uses far less energy (up to 80% less) while producing far more light, less heat and having an ability to be directed specifically to the area to be lit. They also have the possibility of instantly turning on or off when controlled by a sensor or timer, something the older bulbs are not able to do. Early LED lights were very blue in color but are now being superseded by bulbs that are much warmer, thus improving color rendition and general acceptance.

Lately, research into night light and its effects has shown the direct relationship between artificial lighting and major environmental effects such as land, air, sky and water pollution. In supporting our incredible web of lighting on earth we are using immense amounts of electricity which must be created by, in most cases, power plants belching carbon dioxide and other green house gases. This material contributes to the pollution of the land, water, air and sky, in turn contributing to unhealthier conditions.

Health-related research has shown that artificial light at night has an effect on our health by reducing the amount of melatonin the body produces, thus increasing the probability of breast or prostate cancer as well as other health, social and work-related problems related to sleep deprivation. Biological research has shown that the increase in levels of light at night now affect predator-prey relationships as the length of time when predators can hunt has been increased. This disturbs the relationship and can cause increased predation leading to population crashes. As one example, in South Africa, great white sharks have learned to use the light pollution from coastal towns to hunt seals into the night.

Birds and insects also experience problems with night lighting and plants are also affected by the change in the light/dark cycle.

Artificial light at night is an insidious force, promising safety and security while causing untold problems across the human and natural worlds. However, there is a growing concern about the environment, the waste of energy and its high costs, the increasing carbon footprint of towns and cities with the attendant pollution of land, water, air and sky and the health of citizens and the night environment. New LED technology, combined with these problems, has made it far easier for concerned citizens to press the case to governments. They want improved approaches to dealing with light/energy waste while reducing energy costs (and saving the taxpayer money) while improving the quality of life.

The Light-Efficient Community concept is one which unites these concerns and attempts to address many of them through a program which promotes energy conservation, reduced consumption and efficient use of energy throughout the community.

C. The Light-Efficient Community Goals

A main goals of a Light-Efficient Community are to provide the maximum degree of light efficiency, safety and security while minimizing light and energy waste and reducing health effects on people, energy costs, light pollution, glare, light trespass and environmental effects on flora and fauna.

In changing technologies and developing new approaches, the LEC reduces greenhouse gases and its carbon footprint, while reducing pollution of land, air, sky and water by power plants. LEC's strive to use light responsibly, continually working to minimize the negative effects of lighting throughout the community. LEC's make for good neighbors!

D. The Approach to Creating a Light-Efficient Community (LEC)

Many people have tried over many years to interest councils in reducing light pollution. However, the concept of pollution of any type, as an unacceptable aspect of contemporary society was slow in gaining public understanding and acceptance. Even now, light pollution is not commonly recognized as a legitimate form of pollution requiring attention and resolution. However, recent research indicates that light pollution is the result of energy waste and has many negative effects associated with it, thus requiring everyone's attention and changes in attitudes, values and actions.

During the latter half of the last century concern over the environment became a major issue and the specter of global warming served to focus attention on the unbelievable amount of energy wasted in various areas – energy waste and carbon dioxide production that are main contributors to global warming. The concepts of efficiency and effectiveness became important in how people chose their homes, cars and machinery. The 'green' movement had begun. This movement made society analyze its use of energy and waste and plan for more efficient use of resources. It is on this movement that we are building the concept of the Light-Efficient Community.

In 2008 I realized that if the lighting of the city of Edmonton were allowed to increase as it has, my nature preserve 150 km to the northeast would be overwhelmed with light pollution. Having had astronomy as a hobby all my life and growing up with very dark skies, I knew it was time to begin protesting the advancing light pollution from Alberta's largest city and greatest light polluter. I decided to form the Alberta Dark Sky Association and fight for changes to the City of Edmonton's lighting practices. Through people I knew, I was able to identify a small group of people from various backgrounds who had a deep interest in fighting light pollution and improving our night skies.

In a meeting of our group I reviewed our situation and concluded that we were never going to win our case against light pollution with city council unless we dropped the emphasis on light pollution and made our thrust for more effective and efficient lighting to create a healthier, safer and more secure environment for our citizens while saving significant amounts of money in the process.

As well, I recommended that we adopt an easy to understand designation that succinctly represented what we were trying to accomplish. As well, the title had to be in line with the city's environmental programs. I proposed we use the term "Light-Efficient Community." Our concern was light. Our thrust was efficiency. Our target was the community. These are all terms easily understood by anyone. Thus, our approach was changed and, eventually, we successfully made our case for a new lighting policy.

By adopting the LEC approach we were able to get the ears of council and obtain their support in creating new policies and upgrading our street lighting to LED's. As well, other communities in Alberta with which we worked developed LEC programs based on our approaches and adopted the LEC title to describe their programs.

E. Meeting People, Promoting Interest

Before you decide to approach council, it is recommended that you feel out your community and foster interest from other individuals and groups in the community who have a stake in the outcomes of the LEC. Forming an interest group and presenting yourselves with a common goal to the public and council will have a much greater impact and increase your chances of success.

In your town/city there are probably a number of people who are concerned about the amount, use and waste of light in the community. Plan to find, meet and work with these people and organizations to bring public pressure on your town, city, state or provincial governments to undertake a program leading to a LEC. Start of data base of like-minded people and people who are related to lighting technologies and their uses.

Check your local directory or the web for contact information on these organizations. Do not be afraid to contact them and meet with them as they may have human and other resources which will aid in your interactions with lighting authorities and politicians.

Organizations such as those devoted to astronomy are most often directly affected as members may have to drive a great distance from the community to find dark areas in which to observe astronomical objects. Local universities and colleges often have the same problem and have members who may belong to local astronomy clubs. Often these groups already have an anti-light pollution campaign and are looking for additional help to meet their goals as well. Perhaps the LEC approach is what they need to gain success, as in our case.

Environmental groups also may/should have an interest in light pollution and reducing its effects as these effects may seriously affect the very environments they are trying to protect. Light pollution may also seriously affect flora and fauna in an area and should be considered when designing environmental protection programs.

Consumer and taxpayer organizations have an interest in reducing costs and waste while saving money. Much money can be saved through the adoption of new technologies, policies and approaches. All it takes is the realization that it has already been done and can be done locally.

Government environmental departments should also be aware of the effects of light waste and pollution on the environment, although this is not always the case. One can easily contact these departments and request information on their programs, if any, related to light pollution and energy waste. Ensure you also obtain the names and contact information of people who work in these related areas as well as the names of Ministers/Secretaries for environment and energy.

Many police organizations will have an interest in lighting and how it can be used to reduce and control crime and criminals. Since light and color are mood changers and help or hinder the criminal in his/her choice of target, lighting, when appropriately used can have an effect on criminal activity. Another area is, of course, public safety and security.

Proper lighting, if appropriately used, can help to reduce accidents by helping drivers and pedestrians better see their surroundings, signs, road conditions, etc.

Politicians are the prime targets in making policy changes for lighting and energy use. They do want to be seen as being concerned about the interests of their communities and how they can reduce the costs of government, if at all possible, while bringing their communities up to new standards.

Community advocate groups, such as community leagues, are usually interested in reducing energy consumption in their own communities as this is a cost to the taxpayer. These groups may well be interested in and supportive of new technologies and approaches to lighting which will save the community money while making it more environmentally friendly. Representatives from these groups feed information into city councils and advocate for change. Councils often depend on them for advice and as often heed the advice given.

Often these groups have people with special interests speak at their meetings. Contact your local community organization and arrange to give a presentation as to how new lighting technologies can improve their communities and the surrounding environment.

As well, it is sometimes possible to have your local councilor attend these meetings. This would be advantageous as it would give you an opportunity to make contact with him/her and arrange for a more complete dialogue at a later time. Through this arrangement, you may pique the interest of the councilor and prompt him/her to meet with you for more information.

Energy companies may also have energy-efficiency programs which they use with local consumers of all types. These companies may also have materials which are valuable to you in that they provide useful information and documents that you may be able to then distribute to other interested people. It is also important to develop a contact with your energy provider to see what programs they have or may be developing to change the lighting within your community. Since many of the larger energy companies have people charged with the task of researching lighting trends and energy-saving technologies, they can be a valuable asset or even an ally in trying to get communities to change lighting policies and use new pollution-reduction technologies.

Independent lighting consultants can also be a great asset in providing resources of all types and in helping advocate for better community lighting. They have the background technical knowledge with which to carry on dialogues with those in the lighting department, supporting the goals of your group. Since independent lighting consultants usually do not have a direct financial stake in council's decisions, they can often be counted on to provide impartial opinions on changes to lighting and are valuable allies in creating change.

F. Educate Yourself

Knowledge is Power!

Use the materials in this kit to get an overview of the various problems created by light pollution. Educate yourself on the various types of lighting and the positive and negative effects of each. Learn how bad lighting creates problems rather than solves them. Learn how appropriate lighting actually increases safety and security while saving money and creating desirable side-effects. Use all types of media, especially the Web, to obtain information on light pollution causes, effects, costs and solutions. Use the Web to contact lighting manufacturers and consultants as well as government agencies and light pollution specialists and researchers. Search for information on light pollution costs as well as effects on health, safety, security, flora and fauna, and the environment.

Knowing what has occurred in other LEC communities will help you to best determine how to plan and execute your program.

- get and review current LEC Policies from other communities. If possible, talk to people in these LEC's about their program, its effects and problems/solutions if any.
- compile success stories from other communities
- define where there have been common or unique problems in other communities
- determine how these problems could have been avoided or solved.
- use web-based resources, contacts, etc. to accumulate information.
- Set up a database of contacts and related information.
- Contact LED street and road lighting manufacturers and lighting consultants for assistance, information and recommendations.
- Find out how many streetlights are in your community and other major sources of light waste and pollution such as football fields, hockey rinks, car lots, strip malls, etc.

The more information you know about lighting, its pros and cons and its positive and negative effects the better you will be able to talk with others and make your case for lighting changes in your community. This information can come from a wide variety of sources but should be as current and accurate as possible. Technical information on various LED lights should come from the manufacturers or their representatives. Other information on the effects of light pollution may come from the many documents available on the Web created by well-established experts and researchers in the field . Since this is a rapidly expanding area of research in so many areas, it is difficult to keep up but most contemporary articles are available through Web searches. Linking in with other LEC groups and organizations will help to ensure you are getting new information as it becomes available.

G. Educate Others:

In order to garner support for your efforts and be able to assess the support you may have, it is necessary to share with others in the community what you have learned about the current lighting situation and the solutions that are available. Many people will be ignorant that there is indeed a problem and may be reticent at first to consider your points. However, be patient and persistent.

Energy and cost savings should be emphasized as well as the other costs of land, water, air and sky pollution. Continuing savings over the years through reduced maintenance should also be considered in determining costs. (What does it cost to maintain one fixture in your area – light bulb expenses and men and equipment? Why is the government continuing to waste money on obsolete equipment when new equipment can be saving money?)

When you talk to other people about light pollution and energy waste, ensure that you have a good understanding of the various aspects of lighting, its problems and its advantages. People will at once sense whether or not you have a good basis for saying what you do in your presentations and discussions. If you do not have this information at hand, you may offer to locate it and pass it along as soon as possible.

People are always concerned about change and how it is going to affect their lives. When the lighting is about to change in a community, many people have great fears such as:

- Are they going to shut off the lights?
- Is it going to be darker at night?
- Are we going to experience more crime?
- How am I going to be able to see at night?
- How secure is my property going to be?
- How secure am I going to be?
- How safe will it be going out at night?

A good presentation addresses these important questions and allays the fears of those who are already concerned. (LEC's have NOT recommended that communities shut off the lights. LEC's DO want better, more efficient and effective lighting.)

A LEC strives to ensure that safety is improved after the new lighting system is installed and security is also enhanced by using scientific principles. Safety is improved by ensuring that sufficient light of an appropriate quality is available for driver and pedestrian when on the streets and lanes and that the lighting system is designed to ensure that dark spots or areas that are over-lit are removed. As well, glare must be reduced so that anyone can see clearly while driving or walking. Lights, such as those on sensors, must come on and make light available only when and where required.

Basic principles learned from research must be presented and addressed. They should include the following:

- Most people are afraid of the dark. That includes criminals.
- Most people, including criminals, avoid dark places.

- Criminals need light to undertake their activities. Note that 80% of criminal activity occurs during daylight hours.
- Vandals usually want the results of their acts seen. Dark places don't afford that opportunity for satisfaction.
- Human vision and the mind react to change. A flashing light, such as lights on sensors, alerts anyone around to activity within an area. Lights that are on all the time do not provide this stimulus and do not alert people to trespassers, intruders, etc. (Why do emergency vehicles use flashing lights? – To attract attention!)
- Highly lit areas that are badly lit may become a focal point for criminal activity.
- Changing regular street lighting to full cut-off (shielded) lighting does not increase criminal activity in an area.
- Criminals can hide 'in plain sight' when using blind spots created by inappropriate high-intensity and high-glare lighting.
- Criminal or other human activity may be reduced or controlled through appropriate lighting and scientific techniques.
- Police involvement, thus costs and time may be reduced by using appropriate lighting in areas where criminal activity may be high.
- Health and sleep-related problems are significant factors to be considered when using or changing artificial night lighting. Houses must not receive direct lighting. Street lights on sensors help to reduce the amount of available light at night.
- Reducing the level of artificial lighting at night reduces one's chances of contracting breast or prostate cancer by a significant amount (World Health Org. and American Medical Association)
- Reducing or eliminating artificial night lighting also greatly lessens the amount of sleep loss and the many resulting side-effects which impact humans.
- Reducing the amount of artificial light at night reduces the negative effects on flora and fauna in the night environment.
- Switching to LED lighting (preferably warmer in color) can significantly reduce the amount of power used, the resulting power costs along with high maintenance costs.
- Adding control accessories (sensors and timers) to LED lighting can save even substantially more money over time and is the best approach to using LED's.
- Artificial night lights attract and affect migrating birds to a great degree, luring them to crash into tall buildings and kill themselves. It can cause flying insects to be attracted and circle a light until they drop or die of exhaustion.
- The use of certain colored lights and their intensity affect moods. This can entice or dissuade people from congregating or lingering in certain areas.
- Lights of certain colors can attract some animals, changing their natural behaviors and contributing to their deaths.

a. In person

Talk to people about the costs of exterior lighting and the savings to be had through new technologies and approaches. Talk about the LEC approach and how it can make the community healthier, safer and more secure. Finally, discuss the causes and effects of light pollution as well as the costs, solutions and benefits. Get their reactions. Ask them what they think should be done about it, if anything. Ask them if they would support a

move to make changes to the lighting in your community and if they would talk to their councilors about making these changes. If not, why not? (Ensure you keep an open mind and present your arguments in a respectable and calm manner.) Try to determine what their points of view are and why they hold those opinions. Try to prevent getting into an argument as it will solve nothing and usually only create bad feelings. Give other people time to consider your points. Provide others with your contact information and/or indicate to them how they can get more information on the topic, especially on the web.

Identify individuals whose interests and profession are related to energy/cost savings. Of particular note are people working as lighting consultants and lighting engineers. (Our group had three of these and they were vital when talking with the city's lighting department about technical issues related to lighting.) Other individuals may be astronomers /astrophysicists from local universities or colleges, environmentalists who have some knowledge of the effects artificial lighting has on the environment, medical people working in areas related to sleep-deprivation and police officials who are interested in controlling and curtailing criminal behavior through appropriate and effective lighting. Since lighting affects almost everyone in the community in one way or another, links can be easily found and interested individuals can be easily identified. Don't forget a representative from the city's lighting department. Not only do they stand to learn much about lighting and its effects, but they can contribute a great deal of information to your group. As well, if they are supportive of your efforts, they can provide support when you decide to take your concerns to council.

Identify local groups, organizations and businesses which may have an interest and contact their representatives. Local groups such as astronomical groups, university or college professors teaching astronomy or astrophysics, among others can be great sources of information and support in changing lighting in the community.

Identify yourself to the organization and determine common areas of interest. Ask to speak to someone who works in areas related to light pollution or its problems. Get contact information. Arrange to meet, if possible. Set up an information kit for the person. If possible, make a presentation to the group and solicit their support. Have the group identify a representative which will represent their interests to your group and later to council.

b. Using local media:

Write succinct but informative letters or articles about LEC's and their advantages then submit them to the local newspapers or newsletters. Briefly outline the problems with current lighting and emphasize the positive effects of the LEC approach on the community, energy waste, lighting costs, health, safety, security and quality of life as well as environmental protection. Ask the reader to contact his/her council member to support the LEC approach in changing exterior lighting in the community.

Contact the local community TV channel and offer to do an interview on LEC's. In most cases these TV stations are very interested in getting more local news and issues and providing a forum on interesting topics for community members.

c. Using the Web:

Web sites are miraculous tools for spreading and retrieving information. A web site devoted to your local LEC program can do much to spread the word through the community and educate people as to what LEC's are and their advantages. It can also serve as a readily accessible source of information for the interested public and other organizations.

Start a LEC website for your local LEC program and include:

- The definition of a LEC (front of this article)
- Information sheets from www.AlbertaDarkSky.ca website
- Local news related to your LEC efforts (meetings, council meetings, etc.)
- Photos of the extent of local light pollution and its effects.
- Start an on-line petition asking for better lighting and a LEC program.
- News from LEC's in other areas. Remember to state their successes.
- Items related to LEC concerns.
- An opinions page
- A letters page – particularly letters of support from local people and groups
- A local activities page – what has the LEC group done and will be doing
- Articles as to how lighting affects local groups with interests
- Include materials as required from the LEC Kit.
- Link to other LEC-related sites

Advertise your web site to local groups and individuals through word of mouth and other community media. Make your web site work for you and reduce your work load by letting people get the information from your site on demand. Remember to tell them that they can distribute the information freely to others as well, unless materials are restricted.

d. Working With the Media:

CAUTION! The media are well known for using words that are essentially sensational and/or twisting your words to make them sound sensational. Carefully choose your words when dealing with the media and, if possible, record your statements yourself for future reference. Provide written press releases that are carefully prepared in advance. (In one paper our group was referred to as 'Angels of Darkness!')

It is best to have a prepared statement or other information which accurately reflects the approach that you/your group wish to see the community take. Being hesitant or wishy-washy will provide them with an opportunity to choose whatever they want to use and use it. This can have a great negative effect on your program. It is best to choose one person from your group who is articulate and forward to handle main media enquiries for your group. Provide the media with printed materials which accurately reflect the goals, concepts and approaches you are trying to put forward. Avoid altercations with media members if at all possible. You want them to be on your side in the final analysis.

Press releases should follow a regular format and should be comprehensive but concise. Remember to include useful photographs, graphics, charts, etc. which provide information in an attractive, concise but informative and easily understood manner. These can be very effective in conveying much information in very short time and provide points of interest in any presentation.

Copyright Concerns
Ensure you are using materials you have permission to use or materials for which you have obtained permission to avoid copyright problems.

H. Meeting with Municipal Councilors:

At some point you are probably going to have to meet with your councilor or council in order to press your concerns and solutions. Local councilors will probably be the most important contacts you have in getting changes to lighting in your community. They are the group that formulates policy which will then translate into action on the part of the lighting department. Policies and bylaws are created by councilors and then other city employees are expected to ensure that these are followed by community members, businesses, industry, etc.

You may wish to first contact your particular councilor and arrange for a meeting to discuss LEC creation. As well, you may wish to invite the councilors that deal specifically with public works (lighting), finances and the environment as these areas will all be affected.

This preliminary meeting will help to establish contact and understanding as well as provide feedback to you and your group as to the best way to proceed with this project. Find out how much time you have for the initial meeting so you may plan accordingly. Trying to cover too great and area in too much detail usually only leads to frustration on the part of both parties. Ensure that you do cover your important points!

It is preferable to send a covering letter with a package of LEC materials to the attending councilor(s) before the meeting so they have an opportunity to understand what an LEC is, it advantages, how it works and how it is created. This will save time at the meeting and indicate to the councilors that you are prepared, have well established goals and objectives as well as solutions for the community.

This introductory package may include:

- The Introductory Letter
- The Light-Efficient Community – an Introduction (document)
- The single sheet handouts from the LEC Kit
- Lists of other communities that have adopted LEC goals
- Copies of policies from other LEC's
- Comments on LEC's by officials from other LEC's.
- Other information of interest at a local level (number of street lights, local effects of lighting, etc.)

Your goals for this meeting should include:

- introducing yourself and your group or related groups' representatives
- introducing your goals and objectives regarding changes in lighting
- an overview of how current lighting affects the interests of each group
- a quick overview of your specific concerns regarding community lighting
- an overview of solutions to the problems you have outlined
- an overview of how the proposed changes will impact the community and its groups
- obtaining reaction from the councilor(s) (which should be noted)
- a request that the councilor(s) take the LEC concept forward to council for reaction.
- an offer to speak before council on the matter
- an offer to work with council to create a LEC policy for the community.

Speaking to Council

Speaking before a town or city council can often be a daunting experience. However, if you are well prepared and supported by members of your group, the experience can be a valuable and memorable one.

a. Preparing for the Presentation:

Note:
Your recommendations should involve the saving of money and improvement of the quality of life in the community. This is a prime approach to getting their attention. You must then be able to follow this up with a plan as to what must be done, how and why and the outcomes of the LEC plan. Do not dwell on the bad job the lighting department has done, but concentrate on how it can be improved through new technologies and approaches to using light effectively and efficiently.

Provide samples of costs associated with the change of current lighting and the savings to be had in the areas of energy conservation and reduced maintenance costs. Although at this time (2012) the costs of LED streetlighting is approximately 1/5 more expensive than the ubiquitous cobra head luminaires, the costs in reduced energy consumption are considerable and continue to accumulate over time. The addition of sensor-based lighting on demand further reduces the energy costs to a minimum. It also increases the lifetime of the LED, further reducing maintenance costs.

Getting Prepared:

- get all the pertinent information (date, time, length, place) of the presentation.
- find out what media the council chamber or other room supports. (It is pointless preparing certain types of media if you cannot use it for the presentation.)
- work with your group to plan the presentation (speakers, media, et.).
- gather, evaluate and prepare your materials well in advance.
- prepare a copy of the Introductory Letter as a preface to the LEC Kit for councilors.

- make your prime goal the creation of a lighting policy which includes the adoption of efficient, effective, cost-saving LED lighting in the community and light trespass reduction
- use photographs, graphs and graphics to make and support your points in print and on the council chambers' screens. Ensure your material looks professional, is easily visible and understandable.
- adjust your presentation to be compatible with the length of time you are given.
- designate one person from your group as the leader for the meeting and to whom council will direct questions.
- designate other members of your group to answer questions about topics with which they are most familiar and which affects them to the greatest degree.
- do a test run of the presentation with your group. Check the time it takes. Also check that all media are working as desired. Discuss and make necessary changes.
- if you are making your presentation with a computer and projector, ensure you have at least one backup of the presentation in case something goes wrong with the main copy.
- if possible, borrow from a manufacturer or distributor a working sample of a LED streetlight. Know how to turn it on and off to illustrate its attributes.
- prepare an information kit of sufficient number for the councilors. Print and use many of the handouts found in the LEC Kit.

b. Making the Presentation:

i. Just before the Presentation:

- make sure you arrive well ahead of time and know in which room the presentation is to be made
- provide your media (computer disc) to the receptionist, if necessary
- ensure that the computer projector or other media equipment are working as desired well beforehand
- check your position on the list of those who are to speak to council
- provide any other data or materials the receptionist may need for councilors, along with the councilors' LEC Information Kit

ii. During the Presentation:

- refer council members to the information kit you have prepared for them.
- emphasize how efficient lighting will save the community money through reduced power consumption and lower maintenance costs
- show how new lighting fixtures and policies will enhance the human aspect of lighting (health effects – cancers, sleep-deprivation, social and work effects) as well as quality of life)
- emphasize that safety, security and health will be improved with appropriate lighting
- show how this program will tie in with the community's environmental goals and programs and enhance these at the same time
- downplay the light pollution as your prime goal if necessary.

- indicate that other communities are undertaking LEC programs and are operating them to save money and energy while reducing their carbon footprint
- recommend the use of full cut-off LED, dark-sky approved street lights to save energy and money while reducing glare, light trespass, and light pollution
- recommend that council take interim action immediately to stop the installation of old-style lighting and begin the change to LED streetlights.
- recommend that council immediately begin the process to create a policy for the establishment of a LEC.
- recommend that council establish the temporary position of LECCC (Light-Efficient Community Coordinator) once the LEC Policy has been approved.

iii. Remember:
- answer questions quickly and concisely. Do not elaborate unless asked to do so.
- offer to provide more information after the meeting if desired..
- do not employ highly technical language in answering questions.
- Speak simply and make the answers understandable.
- be polite, respectful and courteous.
- be helpful and resourceful.
- remember to thank council for providing the opportunity to make your presentation.

Note:
Council may decide to act on your requests at the meeting or at a later date. Council may take some interim measures and also direct the lighting department to establish a committee to begin the policy creation. How they proceed may vary from council to council for a variety of reasons.

Offer to work with government officials to provide information and sources of information which will help them in creating the policy. Request that council undertake the following approach to create the new policy and begin the changes to lighting throughout the area. Note the following sections dealing with Interim Measures and Long Term Measures. You may recommend these measures to council as communication with the community is vital to understanding and accepting the coming changes. Keeping a community in the dark about the new lighting can only lead to frustration on the part of the citizens and resistance to the changes.

Interim Measures:

As an interim measure council should

a. direct the lighting department to immediately stop the installation of any new lighting which is not full cut-off LED and install full cut-off LED's instead. If the city takes the lead in making the conversions this sends a message to the rest of the community – do as I do. The city cannot expect others to undertake conversions if it is not willing to do it itself.

b. council should direct the lighting department to ensure that the maintenance program now installs full cut-off, dark-sky approved LED lighting instead of regular luminaires whenever maintenance is to be done on streetlights or other exterior lights.

c. council should release a press-release to the community that a new lighting program is about to be undertaken and that, starting, immediately, more effective, efficient, money saving LED streetlights will be installed as the community enters this program. This preliminary communication must be comprehensive enough to supply all the basic information people have to have to understand what is going on in their community.

Council may also want to designate a LEC Community Coordinator at this time to handle all communications with the public and specifically with those neighborhoods which may be immediately and directly affected by changes. One well prepared source for information is much more preferable to several sources that are only handling one part of the conversion process. (Please see "The LEC Community Coordinator (LECCC)" which is part of this LEC Kit and Long Term Measures below.)

People should be alerted that the new LED lights will provide a different color of light than the old sodium vapor luminaires but that, over time, they will be preferred. The news release should indicate that substantial energy savings will result from the changeover and the change will ultimately result in major savings to the lighting budget.

The press release should also indicate that, because of its design, the new LED lights will provide reduced glare and light trespass, a boon for drivers and pedestrians. As well, the LED lights will direct light exactly where it is needed and not leak light into the sky as did previous luminaires. Characteristics of the new lighting should improve the health, safety and security of the community.

Council should also indicate that a start is being made on a LEC policy which will substantially improve the quality of health and life while reducing costs and waste.

Long Term Measures:

For the long term, council should establish a committee consisting of the lighting department and representatives from stakeholder groups (including your group) to:
a. review available policies and procedures from current LEC's and
b. create or adopt a LEC policy reflecting the goals and objectives of an LEC

This committee should include:
- at least one member of the council
- yourself – representing your concerns
- your group – the coalition (as representatives of groups, associations and organizations)
- the lighting department
- lighting consultants (who may be part of your group and/or coalition)
- environmental representatives from various organizations and government agencies, etc.
- the police department and others

Council should provide timelines for creation of the policy along with any other guidelines it deems necessary. Creating and adopting the policy should occur in the space of a year or less.

Upon completion of the Light-Efficient Community Policy, council should establish a temporary position of LEC *Community Coordinator (LECCC). (See LEC Kit document: LEC Community Coordinator)* Recommend this to the committee and to council as it will save a lot of grief and confusion further on down the line.

One of biggest problems in making change in the community is to ensure that the public has complete, accurate, up-to-date information about the coming changes. Failure to do this usually results in chaos and in many calls to various local government offices as people see changes occurring without prior knowledge. The easiest and best solution is to have one person acting as liaison between the citizens and local government. Having one person coordinate all information for the public ensures that the information is available, organized, correct and consistent as this person will have access to all the information involved in the change.

This person will work to ensure that the community understands the W5 (who, what, when, where, why..and how) the policy is going to contain, be instituted and how it will affect city lighting along with residential, business, industrial and institutional lighting within the community. (Please read the document "The LEC Community Coordinator (LECCC)" which is part of the LEC Kit.)

I. General Comments:

Change is never easy for humans as people feel comfortable with the way things are. However, as we learn about the negative effects of our use of light and lighting, it has become very apparent that we must make major changes to the ways in which we create and use artificial lighting and our attitudes towards lighting in general. Our health, safety, security, finances and indeed our whole environment is at risk through our wasteful use of night illumination. Change has become not only necessary but vital to protect ourselves from the side effects of this insidious power.

Getting people to change their attitudes, values and habits is never easy nor instantaneous. Attitudes and values change slowly but that does not mean that it is pointless to try. Success lies in patience and prodding with logical reasons helping to induce others to try new things and ideas. It is also essential that positive feedback be used to support changes undertaken.

Knowing what others have done and learning from their experiences is essential to cultivating change in one's home area. Although resistance of various types will no doubt be met, one's confidence in the program and its results will go far to convincing others that it can be successful and can achieve good for everyone in the community.

As with most other problems, success is often determined by your knowledge and experience in the field. This is why it is recommended that you teach yourself first and go

through the process of learning what this area is all about. Your questions will be the questions you will be receiving from others as you try to educate them along the road. Getting the answers to your questions will help you educate others as to what night illumination is all about, how it affects so many areas and what can be done to maximize its positive aspects while minimizing its negatives.

It must be remembered that we are a society that has grown up bathed in light. It continually surrounds us day and night from our waking moments to the final moments before sleep. We have been brainwashed and fooled into thinking that flooding our communities with light all night contributes to our safety and security. Now we find that this is not so and we must change our ideas, values, technologies and actions to reinvent the ways in which we use night light. We must approach lighting with intelligent, educated caution and, knowing its insidious side, act to ensure that we control it for the betterment of all.

Although our group's concern was initially for the reduction of light pollution, what we have learned has forced us to change the prime thrust of our program. In order to reduce light pollution to a minimum, we have learned that we must go back and take a look at its source and the values and attitudes which allow light pollution to exist. Those values and attitudes towards energy waste and costs that were so prevalent during the early years of our lives are no longer acceptable and now we struggle to save our planet from the ravages of over-consumption and wasteful living.

We have come to realize that we must reduce, reuse and recycle in order to maintain our standard of living while protecting the environment. We have come to realize that in protecting the environment we are indeed protecting ourselves and moving to a higher quality of life. Fighting light pollution affects all these areas in a positive manner. Once again we shall be able to see the stars and once more we shall be able to develop that relationship humanity had with the universe. Once again we will be able to revel in its unlimited majesty, power and awe. Once more we will understand what our ancestors felt with the fall of night and be not afraid.

'For so deeply have I loved the stars that night's vast darkness bears no fear."

Rod E. Mc Connell, B.Ed., M.Ed., P.P.C.
President
Alberta Dark Sky Association – Light-Efficient Communities
(Member of the Light-Efficient Community Coalition)
(Member of the Edmonton Light-Efficient Community Policy Committee)
15704-90th Ave.
Edmonton AB T5R 4W6
Tel.: 780-489-7653
E-Mail: rodemcc@shaw.ca
Web Site: www.AlbertaDarkSky.ca

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