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# **Demons in the Light**

## **Light Waste – An Overview**

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### **About The Film**

# About the Film "Demons in the Light - Light Waste - An Overview"

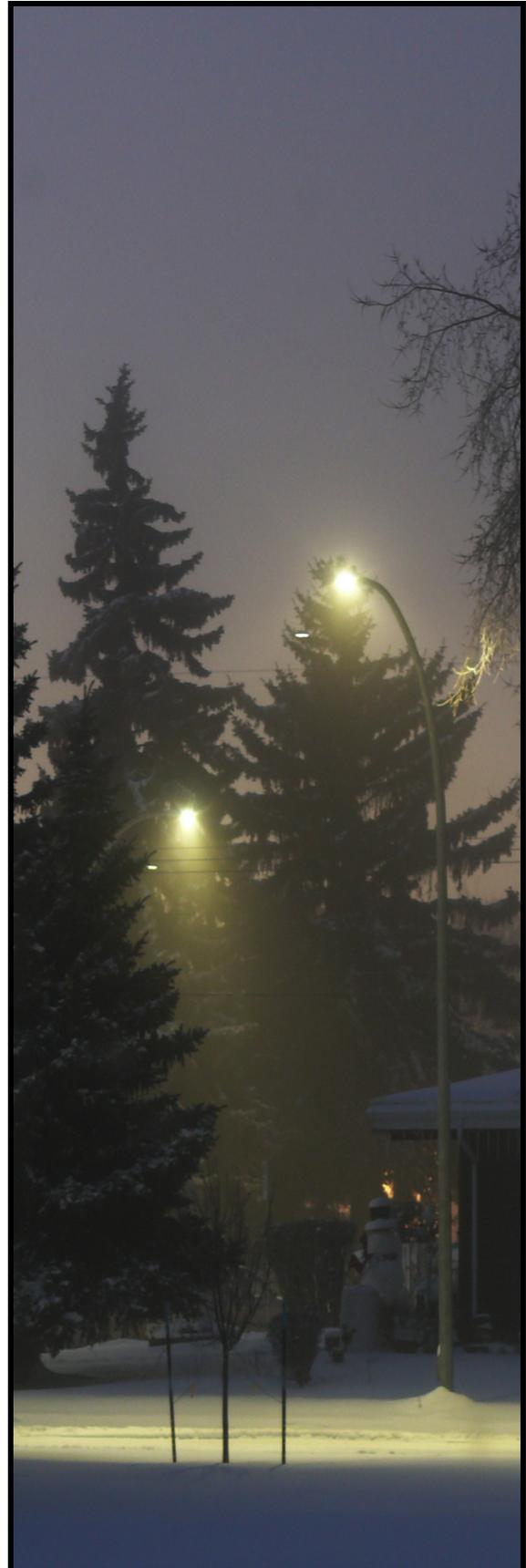
Rod E. Mc Connell - January, 2020

*Note: There are two documents associated with "Demons in the Light" - "Light Waste - an Overview." They are "About the Film" and "The Film Transcript," available through the web site: [www.Light-EfficientCommunities.com](http://www.Light-EfficientCommunities.com)*

## 1. Why There is a Need for this Film

When I began an initiative to reduce light waste, trespass, glare and pollution in Edmonton a decade ago, I had little thought of the complexity this problem posed and the knowledge I would eventually come to possess. I would also learn that light is not the benign energy I was brought up to believe. I would eventually come to know the conclusions and many serious negative results of numerous scientific studies. I concluded that the horrific effects of artificial light waste at night must be quickly and widely disseminated and understood. People everywhere must take quick, effective action to bring these demons under the tightest control.

With my background in sciences, education, media and communications, I was determined to create and distribute effective materials that would assist anyone interested in improving the health and welfare of humans, flora, fauna and the night environment. This film and its related resources on my web site reflect the critical need for this information. The film and attendant resources are available free of charge and may be freely copied and distributed free of charge in their entirety to anyone interested.



As in any initiative, the necessity to reduce light waste and its effects needs to change the attitudes and values of people who use and control artificial light at night. In our society this means every person. This film enables them to identify, understand and minimize light waste in all they do at home, at work and in any other environment. The question is how to create an educational film which is going to deliver the basic concepts effectively and efficiently at low/no cost at home or in any other setting.

Media is an excellent means of transmitting the message and ensuring that the content and concepts presented are enlightening, relevant, consistent and effective. Media is expensive and time consuming to design, develop, produce, test and distribute. Producing appropriate, quality media that is freely and publicly available is so important to getting the message out, duplicated and distributed.

A combination of backgrounds and talents is required to produce effective media of high quality. Access to a major, world-wide distributor is also vital in order to get the information quickly and economically into the hands of people who then have the power to make a difference and change things.

Advocates of better lighting control and use need effective media resources in order to make presentations to city councils, civic groups, educational groups, interested individuals, institutions, etc.. A full colour, moving film is very attractive media and is often the best way to transmit a set of concepts when used with related media (print, web site URL's, etc.)

Until recently, producing a film was a very expensive undertaking. However, high quality cameras of relatively low cost,

combined with powerful computers and software have dramatically cut the costs of production which had been a major stumbling block to creating quality video/film. This, with the talents of dedicated, knowledgeable volunteers and certain web sites on the web, has made possible the creation of excellent products which then makes the tasks of the advocate much simpler but highly effective.

Also important is the existence of companies such as YouTube.com which allow the quick, free upload of films/videos that then provide instant free public access to information on almost any topic. [In this case, free downloads, duplication and distribution rights have been granted to help ensure the information is easily and freely available to any interested party regardless of location or finances.]

## **2. About This Film**

### **A. Film Characteristics:**

Format: UHD video production (MP4)  
Resolution: The film has been shot and edited in 4K format for highest quality.  
YouTube.com: Search for Light-Efficient Communities in the search box.

Note: When viewing this film on YouTube choose the highest resolution format and full screen. YouTube.com cuts off part of the picture when viewing in the small screen format. Headphones are suggested for best audio quality.

Colour/BW: Colour

Film Length: 30:18 min.

Related Text Information Length: 2:40 min.

Full Product Length: 32:58 min.

Equipment: Lumix still and video cameras

Editing: HP Pavillion 4.1 GH with Corel VideoStudio 2018

Production Date: 2020

Target Audience: anyone with an interest in artificial light and its effects on people, flora, fauna, the night environment and climate change.

Reading Level: Grade 8 and above

Budget: \$0.00

Producer / Director: Rod E. McConnell,  
B.Ed., M.Ed., P.P.C., S.S.C.

This film is designed as a quick **overview** which means that it lightly covers the main topics and concepts that can later be handled in greater detail by related videos and other media such as printed handouts, self-education computer programs, web sites, etc..

Due to the breadth of the topic of light waste, only an overview can contain the basic information most people will need and be able to understand. Based on scientific research and findings, the concepts are presented in a simple, straight forward and readily understood manner.

Main concepts are presented along with examples so that the viewer understands what light waste is and the many, serious negative consequences of its continued use. One can later access the related resources of web sites and documents which are able to treat the subjects in greater detail as the learner wishes. A presenter is then able to provide more information through various related media and ways in which the problem may be solved specific to his/her community's situation.

## **B. Content Goals:**

What the producer was trying to accomplish in terms of knowledge, attitudes and skills of the viewer:

1. introduce the concept of light waste, light pollution and their effects throughout the world.
2. increase awareness of the extent of light waste and pollution throughout the world.
3. identify the types of lighting that are causing the most light waste.
4. increase awareness that almost all of the energy currently used to light street and other lights is wasted as heat or light.
5. increase awareness that most of the light created in a luminaire is also wasted through over-lighting and uncontrolled lighting in a community
6. increase awareness of more efficient LED luminaires, the waste of current luminaires, etc..
7. introduce the various types of costs (energy, financial, community costs) associated with the use of artificial lighting
8. introduce how living organisms (humans, flora and fauna) are seriously and sometimes fatally affected by light waste.
9. promote the necessity and urgency in getting communities and individuals to control and minimize light waste in order to reduce the various types of costs to the individual and community.
10. link light waste and its effects to the use of carbon fuels by electrical power plants and promote the minimization or elimination of carbon fuels for electrical production.
11. link light waste to the production of green house gases by power plants and their effects on climate change.

12. promote individual and community action to reduce and eliminate light waste in the community.

13. encourage further learning about light waste, its effects and how it can be eliminated or minimized.

14. provide a learning path for those who are interested in pursuing more information about light waste and programs to eliminate or minimize its effects on the individual or community

15. promote increased interest in learning and experimenting in various sciences involving light and lighting.

16. promote the concept of "dark skies" and its necessity for a better quality of life and improved health of people, flora, fauna and the night environment.

17. location of other materials about light waste and its effects.

*For the educator*, this set of goals provides teaching/learning/experimenting opportunities in all areas of knowledge, attitudes and skills. Downloading and using the various documents and video modules from the LEC web site will help meet these objectives. From the examples used, teachers and students are able to propose various types of experiments which will further enhance and solidify knowledge, attitudes and skills.

### **C. Film Production Goals:**

What were the goals for the production process in making of this film?

1. to complete the film as soon as possible (considering other commitments.)

2. to keep production costs as low as possible (considering there is no budget for this film).

3. to avoid "talking face" television and provide real examples to make the concepts more realistic, acceptable and relevant.

4. to use YouTube.com as the major distributor of the program on a world-wide basis.

5. to keep the concepts relevant to the knowledge and experiences of most viewers in junior high, high school or as adults.

6. to limit the use of technical language so as to foster greater understanding.

7. to use audio, text and visual examples to which the viewer can easily relate in their everyday experiences.

8. to provide quality sound, images and video that are relevant to the topics and experiences of the viewer.

9. to limit the length of the film to 30 minutes in order to accommodate the limits with which most presenters have to meet in their presentations.

10. to ensure that viewers have an interesting, valuable learning experience that they will use throughout life.

11. to ensure that the viewer can quickly find other sources of information by referencing the LEC web site.

### **3. Film Contents:**

The content of the film is divided into 4 major areas; Background, The Problem, Light Waste and Additional Information.

#### ***a. Background***

How mankind has developed lighting that is now found round the world, light wasting and polluting everywhere it exists.

#### ***b. The Problem***

Artificial lighting has created major, serious and sometimes fatal problems for all living things subjected to artificial lighting at night around the world.

#### ***c. Light Waste***

The film presents the problem through an analysis of “costs” divided into the following topic areas.

1. Energy Costs
2. Financial Costs
3. Community Costs
  - a. Light Waste
  - b. Health
  - c. Culture
  - d. Education and Research
  - e. Quality of Life
  - f. Flora
  - g. Fauna
  - h. The Night Environment
  - i. Climate Change

#### ***d. Additional Information***

Note: At the end of the film, there are additional information screens directing the viewer to available related resources.

### **3. Using "An Overview" for Individual or Public Education:**

The prime objective for the creation of this film is to assist those who need learning/teaching materials to enable their self-education and the education of others ranging from individuals to small groups to formal institutions and conferences.

Users would typically introduce themselves to the topic, work through the LEC web site, familiarize themselves with light-related concepts and materials then use those materials to help educate others.

#### ***a. Individual Use:***

One of the prime goals in creating "Demons in the Light" is to ensure that individuals may be able to easily access the film and modules through the WEB and learn about light waste and its effects, hopefully with an eye to making changes in his/her community.

It is intended that all factors work together in educating anyone; the film, the web site, the video modules and resources listed on the web site. Each component contributes in its own way to greater understanding of the complex situation we have created in our use and abuse of artificial lighting.

An individual may start by viewing "Light Waste – An Overview" then proceed to the web site to go through the "Quick Course," expanding his/her knowledge through the pages, documents and videos attached to each concept.

Documents are provided to ensure the process can continue with learning how to initiate a group effort leading to creation of a Light-Efficient Community approach to dealing with the light waste issues in his/her community.

### ***b. Group Use:***

"An Overview" is also an excellent means to introduce a group to the basic concepts concerning light waste. Although this approach negates the individual's wish to scan back and review a section, that can be done by the person privately if he/she reviews the film on YouTube.com.

Presenting to a group usually means tight presentation timelines. The advantage here is that members of the group can still retrieve the film, the video modules and the printed materials from the web site.

Formal presentations are often an hour long. The "Overview" was designed to be 1/2 hour long to provide the main concepts in light waste without great detail. It was designed as well to emphasize the critical importance of reducing light waste to promote the prevention or minimization of the serious negative effects of light waste.

Thus, "An Overview" may be used as an excellent *introduction* to the concept of light waste and those effects. After the film has finished, a discussion on light waste and possible remedies may be held along with ideas for related resources, further research, involvement and actions.

If time permits, video modules from the set on YouTube.com may also be shown which, along with available documents, will provide much more detail for a specific area of interest such as astronomy.

"An Overview" may certainly well serve as an incentive for a group to form to minimize light waste within a company, organization, community or city.

Educating people belonging to this group is of prime importance for its success as

they will, without doubt, be queried often about their understanding of light waste and its effects as well as solutions.

Presenters are reminded that they should ensure their audience members know where and how to locate the information they need via the LEC website. Again, although these resources are copyrighted, they may be downloaded, duplicated and distributed freely without charge.

A typical simple presentation may follow the format below:

1. Presenter is introduced to the audience
2. Introduction to "An Overview"
3. Run the "An Overview" film
4. Re-iteration of the main concepts covered in the film
5. Presentation of the goals and objectives of the presenter's organization relative to waste light and the community
6. Discussion of what concerns the group or organization may or should have and further possible actions
7. Final discussion and evaluation
8. Presenter's or other's contact information
9. Adjournment

As an alternative, presenters may prefer to use an effective 3-step presentation system consisting of

- a pre-presentation information package
- the presentation itself
- post-presentation activities

### **1. Pre-Presentation Information Package:**

The goal here is to educate the attendees in the pre-presentation so that the time spent together is primarily interaction in a variety of ways, clarifying concepts and ensuring understanding of the materials, concepts, concerns, goals and

objectives as well as planning for any future activities.

This system works well. Approximately a month in advance of the presentation, an information package goes to each attendee. This would consist of some background materials, goals and objectives of the presentation. As well, included is a listing and location of some resources on the web (including "An Overview") to review prior to the presentation and other pre-presentation activities as desired.

In this case, attendees, at their leisure, can view "An Overview" on YouTube.com and possibly some other video modules as well as specific documents from the LEC web site. A necessary activity here would be completing the "Quick Course" on lighting on the LEC web site.

The attendees may also be asked to undertake some activities which will then be discussed at the presentation, along with a few specific questions related to the topics covered.

Attendees should then attend the presentation having a basic understanding of the main concepts and be able to carry on informed discussions about the chosen topics. This approach usually results in a positive attitude toward attendees' goals, if done properly.

## ***2. The Presentation:***

The 3-step approach allows more time to be spent on interaction, discussing the topics and emphasizing important points as well as answering specific questions. It also allows time for proposing and defining future activities and their organization. The presenter must

formulate specific goals and objectives for his/her presentation.

## ***3. Post-Presentation Activities:***

Most presenters fail to seriously think about what knowledge and activities they want the attendees to experience after the presentation.

A list of activities should be provided which provides enrichment on the topics discussed, contact information for the presenter or organization which he/she represents, worthwhile activities which will reinforce what has been learned such as:

- doing a home audit of light wasting luminaires and changing them out.)
- evaluating light waste in the neighbourhood
- locating spots of over-lighting and light waste in the community
- finding examples of good lighting in the neighbourhood
- preparing a computer photo scrap book of the community lighting at this time.
- talking with their local neighbours, counsellors, etc. about light waste, its costs, effects and solutions, etc.
- forming a local organization (including community councillors, lighting engineers, etc.) to prevent, minimize or eliminate waste light throughout the community.
- educate the community about light waste, its costs, effects, elimination or minimization, etc.

## ***4. Producing the Film:***

This film is the result of working for over ten years in the area of light waste and its effects. Having backgrounds in sciences, education, media and communications, I saw a shortage of quality materials to educate people about light waste and its effects and materials which would assist advocates in trying to make

positive changes in their communities. I began to develop my own light-related materials for use with interested parties from individuals to community councillors. I knew that the materials had to provide the concepts quickly and easily in order to obtain the impact needed to promote and maintain interest and commitment on their part.

The materials had to be easy to read, attractive, and contain little in the way of technical jargon since many and various topics had to be covered but in-depth.

The materials had to be based on scientific research and its findings. (Some of the findings were so startling that they were ridiculed at first by people who work in the lighting industry!) Linking artificial lighting at night to effects on living things went against many of the "common sense" approaches they normally used. Obviously, they were not keeping up with scientific research in their area of expertise.

(The American Medical Association prepared an excellent listing of scientific research reviewed in preparation of its policy on community lighting – available on the LEC web site.)

I started with a set of handouts and related materials which I made available on the WEB by starting my own web site. I gathered photos from many spots around and out of the city that showed excessive use of light, light waste and problems created by light waste. These photos were quite effective in obtaining the attention of my city counsellor and others who could now relate them to the waste of light, energy and taxpayers' money.

Since many people prefer to watch films/video instead of reading, I began to develop the idea of creating a film which would bring the same ideas across but in a fashion that would catch attention and encourage the mind to think about the issues involved.

I began to not only shoot relevant stills but also video clips to supplement the existing printed materials. My background was indeed essential in order to get top quality segments and weave them into short video modules that concentrated on specific aspects of light waste. These video modules were then uploaded to YouTube.com for distribution to anyone interested.

As well, the LEC web site included the usual printed materials and a "short course" in light waste and pollution. Relevant government documents were also collected and made available through the site.

With the set of video modules behind me it was time to merge some of the major concepts into one short program. This became the "Light Waste - An Overview" film which included the Background, The Problem and Light Waste segments in the film. Presentation time limits forced the film to be short and thus too were the film's segments.

My hope is that you find the film interesting, informative and inspirational. Consider getting involved in your governments to push for changes to your lighting which will make for a less wasteful community in terms of energy and finances. Push for the adoption of the latest LEC-Compliant in your home, neighbourhood and community. Street lights are of particular importance as they generate most light in a community. Other areas include bad advertising and industrial areas as well as car lots. Start bringing pressure for change. You will find many ardent supporters.

## 5. Related Resources:

Please find below a listing of various resources which you will find on the web and in most major communities.

### *a. [www.Light-EfficientCommunities.com](http://www.Light-EfficientCommunities.com)*

This web site is the hub for information and media on light waste, trespass, glare and pollution along with recommendations as to how to choose LEC-Compliant lighting, etc.. Included, as well, is the "short course" on the above lighting factors which includes links to documents and videos on the various subjects covered.

Direct links to related "Demons" videos on YouTube.com are also easily available on the web site.

### *b. [www.YouTube.com](http://www.YouTube.com)*

Use the search box on YouTube.com to locate "Light-Efficient Communities". There are approximately a dozen videos which provide more detailed information on topics covered in the "Light Waste - an Overview" film.

### *c. [The American Medical Association](http://The American Medical Association)*

The AMA undertook a thorough review of research involving artificial lighting and its effects on the community, its people, other living things and the night environment. The results were, in many cases, shocking. This then resulted in a policy which communities should consider in planning light control.

Refer to the policies which were derived from this research and an extensive listing of research and its results by downloading the two policies from [www.Light-EfficientCommunities.com](http://www.Light-EfficientCommunities.com)

### *d. [The International Dark Sky Association \(IDA\)](http://The International Dark Sky Association)*

This excellent association is primarily concerned with the creation of dark sky preserves and protecting dark skies throughout the world. This organization has a membership structure and may be contacted through its web site at: [www.darksky.org](http://www.darksky.org)

### *e. [Local Astronomical Clubs and Associations](http://Local Astronomical Clubs and Associations)*

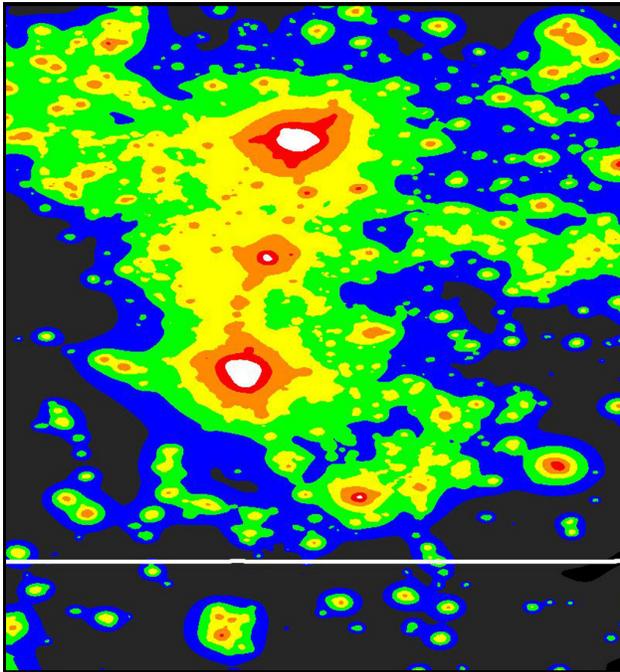
In Canada, the Royal Astronomical Society of Canada (RASC) has chapters in most large cities. (web site at: [www.RASC.ca](http://www.RASC.ca) ) Some communities have their own organizations and web sites. Consult your local community's organizations directory.

*f. [Local Institutes of Learning](http://Local Institutes of Learning)* such as colleges and universities have organizations to promote learning in various relevant areas.

*g. [Local Scientific or Professional Organizations](http://Local Scientific or Professional Organizations)* with an interest in human, flora, fauna health and welfare components and the night environment.

*h. [Local Science Centres, Museums and such Institutions](http://Local Science Centres, Museums and such Institutions)* with an interest in biological, physical and health sciences, etc.

*Below: This map of central Alberta shows the light waste, pollution and financial waste created by the major cities in this province.*



*Below: A photograph of the city and area light waste and pollution from 150 km northeast of Edmonton. Note the stars trailing and fading into the light dome.*



*Above: Credit: P. Cinzano, F. Falchi (University of Padova), C. D. Elvidge (NOAA National Geophysical Data Center, Boulder).*



*Only with the veil of light pollution lifted can we see the incredible beauty of the night sky and all it has to offer. (The aurora as seen from 150 km NE of Edmonton with Capella and other stars to the upper right.)*