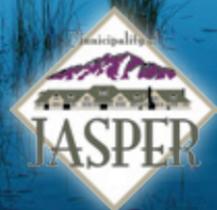




EFFICIENT OUTDOOR **LIGHTING**

Community Handbook



INTRODUCTION

The Municipality of Jasper and Parks Canada are committed to protecting and preserving the quality of the night sky in Jasper National Park and the townsite through the use of responsible and appropriate lighting. The Jasper Community Sustainability Plan, developed in 2011, identifies the goal of protecting Jasper's air quality and promoting dark skies.

The purpose of this community handbook is to assist Jasper residents with choices in outdoor lighting to enhance the livability of the community while conserving the natural dark sky environment.



R. Bray/Parks Canada photo

JASPER NATIONAL PARK DARK SKY PRESERVE

In 2011 the Royal Astronomical Society of Canada (RASC) designated Jasper National Park as a Dark Sky Preserve (DSP). The application for DSP status was prepared by Parks Canada in partnership with the Municipality of Jasper, Tourism Jasper and Jasper Park Chamber of Commerce. Dark Sky Preserves are established to promote the protection of nocturnal habitat and the visibility of the night skies. Dark Sky Preserves support responsible lighting and encourage public awareness and education programs.

In becoming a Dark Sky Preserve, Jasper National Park committed to protect and preserve the night sky, adopting responsible lighting on federal and municipal facilities and developing public education programs.

The town of Jasper lies within the JNP Dark Sky Preserve and must adhere to the DSP lighting protocols. All lighting in the town must eventually be dark sky friendly. Non-compliant lighting in town contributes to sky glow over the park through glare and light trespass that waste electricity and reduce visibility for motorists, pedestrians and cyclists. Through public education and awareness Jasper residents can move towards implementation of dark sky friendly lighting.

Dark sky friendly lighting does not mean no light! With dark sky friendly lighting, light is directed where it is needed. Outdoor lighting when appropriately directed can improve visibility and safety while minimizing energy use, operating costs and glare. Improperly aimed lights can shine onto nearby properties creating conflict with neighbours, drivers, and pedestrians.



R. Bray/Parks Canada photo

LIVING IN A LIGHT EFFICIENT COMMUNITY

What is a Light Efficient Community?

A Light Efficient Community uses light responsibly, lighting the night environment only when and where it is essential. It uses only the right amount of light needed. This minimizes energy waste, lowers energy costs, and reduces its carbon footprint. Residents contribute to preserving the dark sky, while enhancing their health, safety and quality of life.

What does a Light Efficient Community look like at night?

A Light Efficient Community has safely-lit streets that provide maximum visibility while minimizing light pollution and glare. Lights are turned off when not in use. Residents who light their property at night use well-directed lighting, often connected to timers or motion sensors. Decorative property features are lit by energy-efficient, shielded fixtures. This allows a starry sky to be visible from most areas of the community.

Benefits of becoming a Light Efficient Community

A Light Efficient Community creates a healthier living environment that is mindful of the negative effects of excessive artificial lighting. Neighbourhood lighting levels are aesthetically pleasing, not intrusive or disturbing. Residents reduce night lighting that negatively affects plants, animals, insects and amphibians. Excessive night lighting is also detrimental to human health and sleep patterns.

Why does this concern me?

Jasper is a green community that strives to minimize ecological impacts while providing a safe and healthy environment to live in. Improving the lighting in Jasper affects the whole community. Residents can take simple actions that make a difference to their neighbourhood lighting. The Municipality of Jasper is committed to the transition of more responsible lighting throughout the community.



WHAT IS EFFICIENT OUTDOOR LIGHTING?

Dark sky friendly lighting doesn't mean no light or so dim that you can't see what you are doing! Dark sky lighting directs light to exactly where it is needed, and provides the right amount of light for the task.

Dark sky and energy efficient lighting improves visibility and conserves the night-time environment by reducing ambient light levels, energy costs and power consumption, carbon footprint and greenhouse gas emissions, as well as negative impacts to the health of people and wildlife.

What is light pollution?

The inappropriate or excessive use of artificial light. Light pollution compromises visibility and has devastating effects on ecosystems, wildlife, the environment, human health and the quality of the night sky.

What is light trespass?

Light trespass is the poor control of outdoor lighting that occurs when unwanted light spills onto adjacent property.



Light that spills out and up wastes energy, disturbs neighbours and creates sky glow

What is sky glow?

Sky glow is the blurry pink-orange glow over a city that results from artificial lighting.

What is glare?

Glare is the bright light that shines in your eye that you raise your hand to block. Glare creates a sense of discomfort and decreases visibility.



Left: glare | Right: No glare

How to minimize light waste

Use sensors and timers on all outdoor lighting, turn off lights when not in use, choose energy-efficient bulbs and dark-sky fixtures.

White-Blue LEDs

In the past few years LED (light-emitting diodes) lighting has skyrocketed in popularity. LEDs are the most energy-efficient lighting on the market. They are highly directional and have better control over the colour content of light.

Early adopters of outdoor LED streetlights installed white-blue light (colour temp 4500 - 6000 Kelvin). Although these lights are highly energy efficient the harsh white light creates glare, increases sky glow significantly and is generally not pleasing to the eye. The problem with white LEDs is the emission spike in the blue part of the spectrum; the atmosphere scatters blue light into the sky before it reaches the ground creating ten times the glare impact of amber light. In natural settings, blue light at night has been shown to adversely affect wildlife behavior and reproduction.

The safest colour temperature of lighting for people and wildlife is 2700 Kelvin (K) or lower.

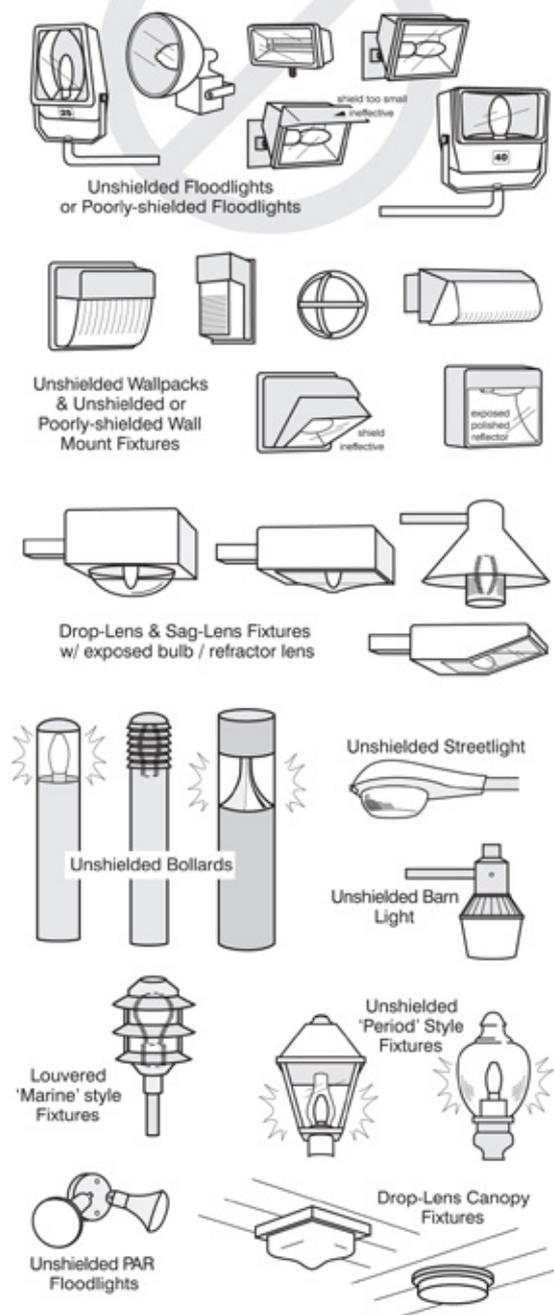
Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



Unacceptable / Discouraged

Fixtures that produce glare and light trespass



Illustrations by Boc Crelin © 2005

Illustrations by Boc Crelin © 2005

LIGHTING FOR A SAFE COMMUNITY

Community lighting levels should be safe and provide good visibility. Research in science, engineering and crime prevention shows that bright, poorly directed light can create black-out areas and glare, providing opportunities for intruders. Well-directed lighting results in evenly lit ground areas and a darker night sky. Night vision is better if glare is eliminated and we are not blinded by our own lights. In fact, night-time lighting often provides a false sense of security and wastes precious energy and dollars.

Points to consider for night-time lighting:

Landscape or decorative lighting

- Are my fixtures directing light downward and not above the horizontal?
- How bright do they need to be?
- Are there times when darkness is better?

Night-time lighting and crime

Contrary to popular belief, most burglaries do not occur at night at all. Instead, 65% of burglaries occur between 6 a.m. and 6 p.m. Most burglars do not want to risk encountering someone so they will try your home when you're most likely at work. The most common hours for a burglary to occur are between 10 a.m. – 3 p.m. The presence of light tends to decrease the fear of crime at night, but studies show that increased lighting is not a significant factor in preventing crime.

Safety: walkways, stairs, entrances or porches

- What do I want to light up, when, and why?
- What is minimum brightness needed?
- Can timers, dimmers or motion sensors save me money?

Security

- Is lighting the right tool for security on this part of my property?
- Could glare and dark shadows conceal intruders?
- Am I creating light trespass or glare for my neighbours, pedestrians, cyclists or motorists?
- Are motion sensors suitable for my property?



Which lights are best?

- Choose well-recessed, fully-shielded fixtures that only emit light downward and not above the horizontal plane of the fixture. These are referred to as full cut-off (FCO)
- Choose lights of 2700 Kelvin or less (warm-white or filtered LEDs) to minimize blue emission

How bright?

- Use low intensity lighting for more uniform visibility. FCO lighting requires fewer Lumens because the light is directed more effectively
- Be careful not to over-light because of the higher luminous efficiency of LEDs

Best practices

- Use dimmers, timers and motion sensors
- Consider dimming or turning off the lights during overnight hours
- Only light the exact space and in the amount required.

FIND THE RIGHT LIGHTS

Detailed information on where to buy dark sky friendly lighting is available on the Municipality of Jasper website www.jasper-alberta.com under ***Environmental Stewardship/ Dark Sky Friendly Lighting.***

MORE INFORMATION

Stay informed with current research on the effects of artificial lighting on human health, safety and wildlife.

Royal Astronomical Association of Canada (RASC)

www.rasc.ca

Edmonton RASC

www.edmontonrasc.com

International Dark Sky Association (IDA)

www.darksky.org

Light Efficient Communities (LEC)

www.albertadarksky.ca

Illuminating Engineering Society - Edmonton

<https://iesedmonton.org>

Municipality of Jasper

www.jasper-alberta.com

Jasper National Park

www.pc.gc.ca/en/pn-np/ab/jasper/info/cieletaille-darksky

The Municipality of Jasper continues to support and enhance Jasper's Dark Sky Preserve designation. In addition to public education and community outreach, the Municipality is working towards compliant lighting on all municipal buildings and to working with partners and stakeholders to develop a conversion plan to dark sky friendly streetlights.

Jasper Dark Sky Festival

Jasper's Dark Sky invites astronomers at every level to gaze upon the wonder of one of the world's largest dark sky preserves. As daylight hours begin to recede, October is the ideal time to celebrate the skies with the annual Jasper Dark Sky Festival. <https://jasperdarksky.travel>

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Jasper
National Park