

## Design for the Environment - Home Owners

It is one thing to propose that we limit our outdoor lighting to protect the environment, but is quite an other to explain how to do it in such a way that it accommodates the needs of humans.

The “easiest” thing to do is just turn off all outdoor lighting but most people will not do this. In order to achieve the greatest benefit we must propose designs and strategies that a large number of people will accept, and that will minimize the impact of artificial lighting on the environment.

Here is a list of techniques and strategies that everyone can use that are beneficial in other ways.

### Area Lighting

- a) Use only full cut-off light fixtures that restrict your light from shining off your property. These fixtures typically have a flat horizontal window on the bottom, and mirrors inside to reflect and focus the light onto the area around the fixture.
- b) Use only yellow or amber coloured lighting and not white light sources (metal halide and LEDs). The most benign sources are yellow or amber LEDs, low-pressure sodium or perhaps high-pressure sodium.

These have a number of benefits.

- a) By minimizing glare, the homeowner can use a lower wattage bulb. This can reduce electricity consumption to less than ½.
- b) Using non-white light reduces the amount of blue light that is very disruptive to the environment. Bright short wave length light (blue) fools our bodies, and those of wildlife into thinking that it is still daytime. This inhibits the release of the hormone melatonin that is necessary for the repair of stressed and damaged tissue.
- c) Short wavelength light is more readily scattered by dust and aerosols in the air. White metal halide light and LED light cause the air to seem to glow above the fixture. Using only longer wavelength light reduces the extent of scattered light in the region.



## Architectural Lighting

- 1) Light fixtures mounted on outside walls of buildings should be fully shielded so they only illuminate the immediate area next to the wall. If no visitors are expected, then these lights should be turned off to save electricity and so as not to attract vandals.
- 2) Porch lights should also be fully shielded so all their light shines down onto the porch surface and the stairs that lead up to the porch
- 3) Railings, the “trip-edge” of stairs and the edge of pathways should be painted white instead of being illuminated.

There are benefits of these suggestions.

- a) The illuminated wall and area next to the wall will give a sense of place for visitors. It helps them get their bearings and provides navigational cues when approaching the building. By turning the lights off, you will save electricity and you will not attract insects to your home.
- b) The glare from unshielded light can reduce the visibility of house numbers by visitors and emergency vehicles. When shielded this light is better-used illuminating areas where pedestrian safety is an issue
- c) Burying electrical wires for more remote areas on your property is expensive to install and maintain. Compared to foliage, white paint is about 20x more reflective. It looks “bright” under moonlight and it is even easy to see under starlight. Crushed stone is another option for pathways since it is 4x more reflective than asphalt. Crushed white stone is also an inexpensive option



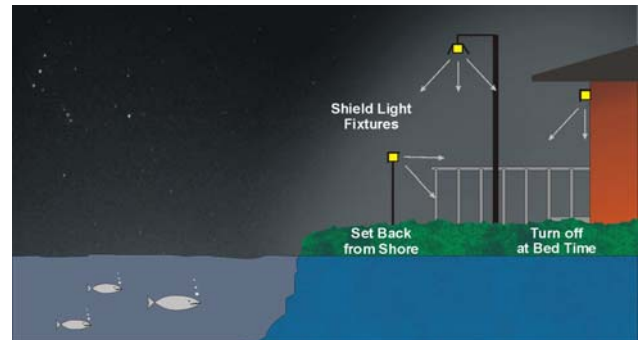
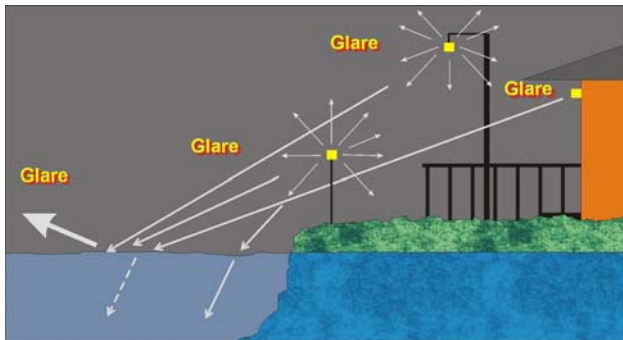
## Shoreline Lighting

- 1) Use well shielded shoreline lighting fixtures and set them back from the water's edge by 10 meters (for fixtures mounted within a meter of the ground) to prevent light from penetrating the surface of the water. High pole mounted fixtures (6 meters high) should be 20 meters back from the shoreline and fully shielded
- 2) Use non-white lighting to minimize its impact on the behaviour of aquatic life.



There are “selfish” reasons for doing these.

- a) The light that shines over the water will produce less shoreline glare for boaters that are out after dark.
- b) It will not attract excessive algae and plant growth next to the shore.



## Indoor Lighting

- 1) Close your curtain within an hour after sunset. By this time, the natural outdoor illumination is less than the illumination that shines out your windows so you will not gain any light from outside, and the spillage from indoor light affects the environment.

As before, there are other benefits from this habit.

- a) If your curtains have a light shade, they will increase the brightness of your room for a given wattage of light bulbs.
- b) With closed curtains you will not attract insects to the window
- c) They will provide more privacy for your indoor activities

