SAVE LIKE AN ISLANDER

Lighting Options for Maine Island Homes & Businesses

Lighting is an important part of daily life, and most buildings use some sort of artificial light source, whether it's overhead fluorescent tubes in a shop or screw-in bulbs in a family home. Electricity use for lighting can make up a significant portion of the electric bill for island homes, businesses, and community buildings, especially in those communities with electric rates above the mainland average ($0.15/kWh). With new options like compact fluorescent lights (CFLs) and light emitting diodes (LEDs), choosing the right lighting for your building may seem like a tough task. This fact sheet will help you consider these new options and decide which is best for your home or business.

Choosing the Right Light

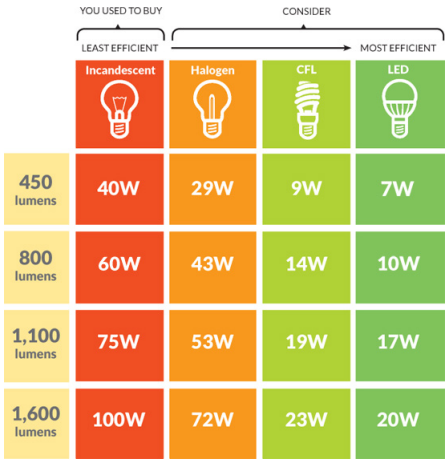
Lighting and Energy Use

Energy use is an important aspect of lighting. Recent advances in lighting technology have created great opportunities for reducing energy costs. The easiest way to determine the efficiency of a lightbulb is to look at its wattage rating.

On average, halogen bulbs use about 30% less energy than a typical incandescent, while CFLs use about 75% less, and LEDs use about 80% less. To put this in perspective, a 14 Watt CFL, used for an average of three hours a day on Monhegan, where electricity is $0.70/kWh, would use $50.37 less per year than an equivalent incandescent. A 10 Watt LED on Monhegan would produce a savings of $54.75 per year.

Light Output

Light output is measured in lumens (the figure on the left of the chart). The amount of lumens a bulb gives off determines its "Watt equivalent" rating, which is usually printed on the package. A Watt equivalent rating is the amount of power it would take for an incandescent bulb to give off a similar amount of light. For example, a 10 Watt LED emits the same number of lumens as a 60 Watt incandescent, so it is referred to as a 60 Watt equivalent bulb.



Source: Efficiency Maine

Color

Color is another factor to consider when buying a bulb. Light color is measured in degrees Kelvin or K, and the lower the temperature, the "warmer" the color. Color is a very important consideration for art galleries, because the type of light cast on a piece of art can alter its appearance significantly.

Bulb Shape

Light bulbs come in many different shapes and different bulb designs have different uses. CFLs and LEDs come in the following styles:

	**A-Line:** Omnidirectional, disperses light in all directions, good for room area and hallway lighting
	**Candelabra:** Shaped like a candle to provide ambient and accent lighting. Often used in decorative fixtures
	**Spot Light:** Concentrates light in a small area, used in track and overhead recessed lighting
	**Flood Light:** Casts a wide, directional beam of light. Often used in outdoor and track lighting

Incandescent Bulbs

Incandescent bulbs have dominated the lighting market for decades, but are very inefficient, and have begun to be phased out of production in the U.S.

Compact Fluorescent Lights (CFLs)

Pros:	• Inexpensive • More energy efficient than incandescent bulb
Cons:	• Contain small amounts of mercury • Take a moment to reach full brightness • Don't last as long as LEDs • Do not dim well

CFLs are a simple, cost effective replacement for any incandescent bulb. Their omnidirectional nature make them useful in tabletop lamps and other uses that require light to be cast in all directions.

Source: https://flic.kr/ps/2cn1ad

Light Emitting Diodes (LEDs)

Recent advances in technology have made LEDs a very cost effective option for replacing older lights such as incandescent bulbs and CFLs, but their directional nature does impose some limitations.

Pros:	• Very efficient, use less energy than incandescent bulbs and CFLs • Long lifetime, last about 20,000 hours • Mercury-free • Dimmable • Reach full brightness immediately • Not affected by ambient temperature
Cons:	• More expensive than incandescent bulbs and CFLs

Fluorescent Tubes

Fluorescent tubes are typically found in commercial or industrial settings. These long, narrow lights come in many different shapes and sizes, and some are more efficient than others. There are several different types of ballasts that can be used with fluorescent tubes, each of which affects the efficiency and quality of light. The type of fixture may also change the efficiency of the light itself.

Fluorescent tubes are rated by their diameter. A T12 bulb is 1 ½" wide (12 eighths of an inch), while a T8 is 1" wide (8 eighths of an inch), and a T5 is 5/8" wide.

T12

These are the largest, most inefficient type of fluorescent tubes. T12s are typically coupled with magnetic ballasts, which are less efficient than their electronic counterparts. These tubes are characterized by their large diameter, flickering, and humming. T12s and magnetic ballasts were phased out of production in 2012.

T8 and T5

T8 fluorescents were introduced in the '80s as an efficient replacement for T12s. These bulbs use electronic ballasts, and in addition to being more efficient that T12s, they also don't have the flickering and humming issues associated with T12s. T5s, while more efficient than T8s, are uncommon, because they are difficult to install.

Pros:	• More efficient than traditional T12 lights • Use electronic ballast that don't hum or flicker
Cons:	• Use a different ballast than a traditional T12 and changing ballasts can be time consuming • Small amount of mercury inside bulbs • Light output is affected by ambient temperature and age • Lose ability to dim over time and are not always compatible with dimming controls

Source: http://bit.ly/1K5EoaW

LED Replacements

LED replacements for fluorescent tubes are another viable option for overhead lighting. There are several styles available that offer similar light quality, extended lifespans, and energy savings compared to T8 or T12 lights.

Pros:	• More energy efficient than fluorescent tube lights • 16,000 hour life is almost twice as long as typical fluorescent tube • Light is unaffected by ambient temperature • Mercury free • Don't hum or flicker
Cons:	• High upfront costs due to installation challenges

Disposal

Incandescent bulbs and LEDs can be disposed of in your regular waste stream. However, fluorescent tubes and CFLs contain small amounts of mercury, and should be taken, in a closed container, to retailer to be recycled. Most stores that sell CFLs and fluorescent tubes will also recycle them for free.

Financing options and incentives

Efficiency Maine marks down the retail price of screw-in LED bulbs purchased in Maine. In addition to the rebates available through the Retail Lighting Program, Efficiency Maine also offers cash incentives for businesses, municipal buildings, and nonprofits that upgrade their lighting systems. For more information on Efficiency Maine's lighting measures and incentives, visit:
http://www.efficiencymaine.com/at-work/business-programs/

Group purchasing: strength (and savings!) in numbers

Buying energy efficient lighting can be made simpler and more cost effective by purchasing as a group. For example, some retailers will offer additional discounts on bulbs if they are purchased in bulk.

For more information on the Island Institute's energy efficiency programming, including bulk lighting purchases on Matinicus, Monhegan, and Peaks Island, contact Brooks Winner, Community Energy Associate, at bwinner@islandinstitute.org, (207)594-9209 ext. 148, or visit our website:
http://islandinstitute.org/energy/

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