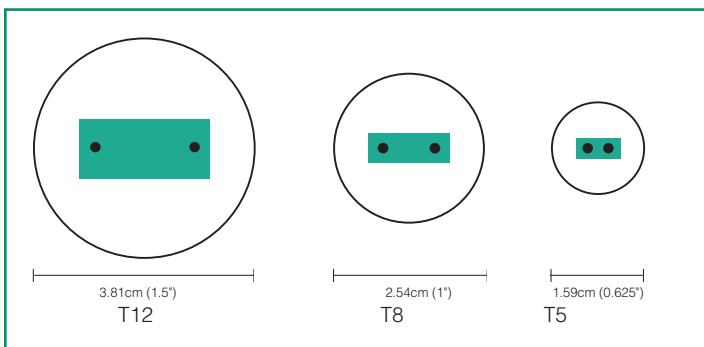


# Upgrading Fluorescent Lamps and Ballasts

Overall, 40-75 percent of the electricity consumed by commercial businesses is used for lighting. This makes lighting the logical place for most businesses to start when looking to improve electric energy efficiency. Efficiency Maine is currently offering prescriptive cash incentives on High Performance T8 Lighting (HPT8) and T5 Lighting Systems for all businesses. These incentives help to make lighting upgrades very attractive investments that will pay back quickly in energy and maintenance savings.

## Fluorescent Lamps and Ballasts

Linear fluorescent lamps are the most common type of lighting currently used in businesses. Lamp and ballast technologies have improved greatly during the last ten years creating the opportunity for significant energy savings, when replacing any prior generation of fluorescent lighting. In addition to energy savings, modern fluorescent lamps have much better color rendition and have a more pleasing color appearance than standard T12 lamps (important considerations for enhancing sales and productivity). Additionally, lamp flicker is eliminated, lamp life is extended, and the lamps maintain their brightness better over their lifetime.



## Efficient Replacement Options

### High Performance T8 Technology

Until recently, the standard 4' lamp was a T12 lamp (T refers to tubular; 12 refers to 12/8" or 1.5"). When replacing T12 fixtures, which will become obsolete in the next few years, Efficiency Maine recommends and offers incentives for High Performance T8 systems.

These systems combine premium performance T8 lamps with ballasts specifically matched to the premium lamp. The result is higher light output per watt (efficacy), longer lamp life, and longer warranties. High Performance T8 Lighting Systems are available in versions that operate at a variety of system wattages.

However, they all produce more lumens (light measured at the lamp) per watt than standard T8 systems. Selected carefully, High Performance T8 Lighting Systems can provide dramatic savings when compared with other fluorescent technologies. A list of T8 systems that qualify as High Performance is available on our Website at [efficiencymaine.com](http://efficiencymaine.com), under the Lighting Guide.

### T5 Technology

T5 fluorescent lamps are 5/8" in diameter. They are constructed in metric lengths (45.2" for a nominal 4' lamp) and, therefore, are not designed to replace 4' T12 or T8 lamps directly. T5 systems are available in standard and high output versions, and can be very useful for situations such as gymnasium and warehouse lighting, as well as specialty indirect lighting systems. For most other types of commercial lighting applications, T8 systems are the better choice.

### Cash Incentives Available

Efficiency Maine is currently offering cash incentives on qualified energy efficient lighting products. Businesses should take this into account when estimating savings opportunities. These cash incentives are available on High Performance T8 and T5 Lighting Systems.

### More Information

Use the worksheet on back to estimate your savings or consult with your lighting service provider for a more precise estimate on prices and savings for your situation. Learn more about cash incentives available through the Efficiency Maine Business Program on our Website, [efficiencymaine.com](http://efficiencymaine.com), call us at 866-376-2463 or contact one of our Qualified Partners.

A complete list of these contractors and suppliers who specialize in energy efficient products and services is available at [efficiencymaine.com](http://efficiencymaine.com), under Business Program, or call toll-free 866-376-2463. The Website also provides information about programs for new school construction projects and residential electric energy consumers.

## Estimate Your Savings

Using the chart below, estimate the savings you would realize by using HPT8 lighting fixtures in your building:

1. Enter the number of fluorescent fixtures in your building.
2. Enter the watts per fixture based on the table below.

A. T12 Fluorescent Lighting Fixture	Average Watts per Fixture
1 Lamp 4' 34 W T12 Magnetic Ballast	50
2 Lamp 4' 34 W T12 Magnetic Ballast	80
3 Lamp 4' 34 W T12 Magnetic Ballast	130
4 Lamp 4' 34 W T12 Magnetic Ballast	160
2 Lamp 8' 95 W T12 High Output Magnetic	227
B. HPT8 Fluorescent Lighting Fixture	Average Watts per Fixture
1 Lamp 4' T8 Electronic Ballast	28
2 Lamp 4' T8 Electronic Ballast	53
3 Lamp 4' T8 Electronic Ballast	77
4 Lamp 4' T8 Electronic Ballast	101

3. Enter the average annual hours used. Use hours/day x days/week x weeks/year to determine annual hours of use.
4. Enter your average electric cost per kWh (from your electric bill). If you don't know what it is, enter \$0.145 per kWh.
5. Calculate your current annual operating cost based on the formula in the chart below. (Repeat steps 1-5 for the new lighting system).
6. Enter existing fluorescent lighting system annual operating cost (5A).
7. Enter new fluorescent lighting system annual operating cost (5B).
8. Subtract 7 from 6 for annual estimated savings.

Existing T12 Fluorescent Lighting System										
1A) # of fixtures		2A) Watts per fixture		3A) Hours per year				4A) Rate per kWh		5A) Annual operation cost
	X		X		÷	1000	X		=	
New HPT8 Fluorescent Lighting System										
1B) # of fixtures		2B) Watts per fixture		3B) Hours per year				4B) Rate per kWh		5B) Annual operation cost
	X		X		÷	1000	X		=	
Estimated Savings from converting your existing T12 fluorescent system to a new HPT8 fluorescent system										
6) Existing Annual Operating Cost				7) Proposed Operating Cost				8) Annual Savings		
			-				=			

## Example of Energy Savings

Existing T12: (4 lamp fixture @ 160 watts @ 3,600 hrs)/1,000 = 576 kWh and \$83.52 per year)

New HPT8: (4 lamp fixture @ 101 watts @ 3,600 hrs)/1,000 = 364 kWh and \$52.78 per year)

Annual electricity savings = \$30.74 per fixture