

# Savings Analysis Worksheet

## Replacing Fluorescent Lamps

### Opportunity

Lighting is usually the first place to look for potential energy savings. Overall, 50-75 percent of the electricity used by commercial business is for lighting. This makes lighting the logical place for most businesses to start when looking to improve efficiency.

**Action: Upgrade fluorescent lamps, ballasts and fixtures with more efficient alternatives.**

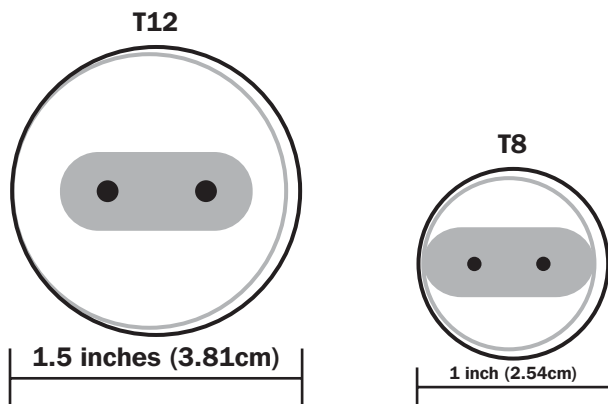
### Fluorescent Lamps

Fluorescent tube-type lamps are the dominant type of lighting currently used in business applications. Even within fluorescent tube technology, however, recent advances have created the opportunity for significant energy savings. You can upgrade your fluorescent lighting system with new fixtures, which use T-8 lamps, electronic ballasts and parabolic reflectors, and cut your lighting energy use by up to half.

### Efficient Replacement Options

You can replace standard 40 watt T-12 lamps with “energy-saver” 34 watt T-12’s, but that may not be the most cost effective option. Energy-saver T-12 lamps reduce energy consumption by reducing light output up to 15 percent compared to the old standard 40 watt T-12’s. If your current lighting system is at or below design light levels, this could result in an under-lit space and a loss in productivity or sales.

A better option is to install higher efficiency, slimmer T-8 lamps with electronic ballasts. This could result in a 40-60 percent energy saving, with no reduction in light output. A standard two-foot by four-foot fixture with three 34 watt T-12 lamps and without reflectors requires 119 watts to produce 3600 lumens of light. A 2-lamp T-8 fixture with electronic ballasts and reflectors will produce equal or higher light output using only 58 watts of electricity, a 50 percent saving! The annual savings, from the example above, in energy costs is about \$13 per fixture, based on 3600 hours of annual use, at an energy cost of \$0.06 per kWh.



T-12 vs. T-8 Lamps

### More Information

You can use the worksheet on the back of this sheet to gain an understanding of the savings potential. Consult a lighting dealer for a more precise estimate on prices and savings for your situation. For names of lighting professionals in your area, fact sheets on other energy saving opportunities and more information on the Focus on Energy Program, call 800.762.7077. Information in this fact sheet was derived from the ENERGY STAR® Small Business Guide published by EPA and other sources. For further information on the ENERGY STAR Small Business Program visit [www.epa.gov/energystar](http://www.epa.gov/energystar).

**Estimate your savings**

Using the chart below, you can estimate the savings you would realize by using T-8 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 to the right.
3. Enter the average annual hours used. Multiply hours per day times days per week times weeks per year to determine annual hours of use.
4. Enter your average kWh energy cost based on your electric bill.
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.

| T-12 Fluorescent Lighting Fixture        | Average Watts per Fixture |
|------------------------------------------|---------------------------|
| 1 Lamp 4 foot 34 W T-12 Magnetic Ballast | 42                        |
| 1 Lamp 4 foot 34 W T-12 Magnetic Ballast | 83                        |
| 3 Lamp 4 foot 34 W T-12 Magnetic Ballast | 126                       |
| 4 Lamp 4 foot 34 W T-12 Magnetic Ballast | 168                       |
| 2 Lamp 8 foot 95 W T-12 High Output Mag. | 219                       |
| T-8 Fluorescent Lighting Fixture         | Average Watts per Fixture |
| 1 Lamp 4 foot T-8 Electronic Ballast     | 30                        |
| 2 Lamp 4 foot T-8 Electronic Ballast     | 58                        |
| 3 Lamp 4 foot T-8 Electronic Ballast     | 85                        |
| 4 Lamp 4 foot T-8 Electronic Ballast     | 112                       |
| 2 Lamp 8 foot T-8 High Output Electronic | 172                       |

| Existing T-12 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 T-8 Fluorescent Lighting System       |   |                       |   |                    |   |      |                  |  |                           |
| 1B) # Of Fixtures                         |   | 2B) Watts Per Fixture |   | 3B) Hours Per Year |   | 4B)  | 5B) Rate per kWh |  | 5B) Annual Operation Cost |
|                                           | x |                       | x |                    | ÷ | 1000 | x                |  | =                         |

| Estimated Savings from converting your existing T-12 fluorescent system to a new T-8 fluorescent system |   |                                 |                   |
|---------------------------------------------------------------------------------------------------------|---|---------------------------------|-------------------|
| 6) Existing Annual Operating Cost (6A)                                                                  |   | 7) Proposed Operating Cost (6B) | 8) Annual Savings |
|                                                                                                         | - |                                 | =                 |