



Compact Fluorescent Cost- Benefit Analysis

Teacher Information Sheet

Average electricity emission factors vary by state and region. The following information, updated April 2002, represents a three year weighted average for 1998-2000.

| Table A | Carbon dioxide (CO ₂) Emission Factors | | | Methane (CH ₄) | Nitrogen dioxide (NO ₂) |
|--------------|--|----------------|-----------------|----------------------------|-------------------------------------|
| | lbs/kWh | short tons/MWh | Metric tons/MWh | lbs/MWh | lbs/MWh |
| New England | 0.98 | 0.491 | 0.446 | 0.0207 | 0.0146 |
| Connecticut | 0.94 | 0.471 | 0.427 | 0.0174 | 0.0120 |
| U.S. Average | 1.34 | 0.668 | 0.606 | 0.0111 | 0.0192 |

Source: <http://eia.doe.gov/oiaf/1605/e-factor.html>

Note: Connecticut figures vary from the region and nation because of our use of nuclear power. Coal fired power plants, more common nationally than in the New England region, are a larger contributor to air pollution.

Calculations of savings for one light bulb:

Comparison between 100 W incandescent and 32 W compact fluorescent, both produce approximately 1600 lumens

| Table B | COST COMPARISON INCANDESCENT vs. COMPACT FLUORESCENT BULB | |
|---|--|-----------------------------|
| | 100 W Incandescent | 32 W Compact Fluorescent |
| Bulb Type | | |
| Purchase Price | \$0.75 | \$6.00 |
| Life of the Bulb | 1000 hours | 10,000 hours |
| Number of Bulbs / 10,000 hours | 10 | 1 |
| Total Cost of Bulbs | \$9.75 | \$6.00 |
| Amount of kWh used 10,000 in hours Example: 100 W x 10,000 hours ÷ 1000 W/kW = 1000 kWh | 1000 kWh | 320 kWh |
| Total Cost of Electricity over 10,000 hours (\$0.15/kilowatt-hour average in CT) | \$150.00 | \$48.00 |
| Total Cost over 10,000 hours (electricity + bulbs) | \$159.75 | \$54.60 |

Source: U.S. Department of Energy, Energy Information Administration

| Table C | EMISSION COMPARISON INCANDESCENT vs. COMPACT FLUORESCENT BULBS | |
|---|---|---------------------------|
| Bulb Type | 100 W Incandescent | 32 W Compact Fluorescent |
| Amount of kWh used in 10,000 hours | 1000 kWh | 320 kWh |
| CO ₂ produced @ 0.94 lbs/kWh (Table 1) | 940 lbs CO ₂ | 300.8 lbs CO ₂ |
| CO ₂ not emitted by switching 1 bulb | | 639.2 lbs CO ₂ |
| NO ₂ produced @ 0.0120 lbs/kWh (Table 1) | 12 lbs NO ₂ | 3.84 lbs NO ₂ |
| NO ₂ not emitted by switching 1 bulb | | 8.16 lbs NO ₂ |

Note: Sulfur emissions are dependent on the amount of impurities in coal and are therefore not included.