



## Life Cycle Cost Estimate for 100 ENERGY STAR Qualified Lighting Fixture(s)

This energy savings calculator was developed by the U.S. EPA and U.S. DOE and is provided for estimating purposes only. Actual energy savings may vary based on use and other factors.

Enter your own values in the gray boxes or use our default values.

Electricity Rate (\$/kWh)	<input type="text" value="\$0.170"/>	<b>ENERGY STAR Unit</b>		<b>Conventional Unit</b>	
<b>Select Fixture Type</b>		<b>Initial Cost</b>	<b>Wattage</b>	<b>Initial Cost</b>	<b>Wattage</b>
Recessed Can ▼	<input type="text" value="100"/>	<input type="text" value="\$87.00"/>	<input type="text" value="16"/>	<input type="text" value="\$10.00"/>	<input type="text" value="65"/>
None ▼	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>
None ▼	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>
None ▼	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>
None ▼	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>	<input type="text" value="0"/>

### Annual and Life Cycle Costs and Savings for 100 Light Fixture(s)

	100 ENERGY STAR Qualified Unit(s)	100 Conventional Unit(s)	Savings with ENERGY STAR
<b>Annual Operating Costs*</b>			
Energy cost	\$894	\$3,630	\$2,736
Maintenance cost	\$427	\$1,150	\$723
<b>Total</b>	<b>\$1,321</b>	<b>\$4,780</b>	<b>\$3,459</b>
<b>Life Cycle Costs*</b>			
Life cycle operating cost (energy + maintenance)	\$17,947	\$64,957	\$47,010
Purchase price for 100 unit(s)	\$8,700	\$1,000	-\$7,700
<b>Total</b>	<b>\$26,647</b>	<b>\$65,957</b>	<b>\$39,310</b>
	Simple payback of initial additional cost (years) <sup>†</sup>		<b>2.5</b>

\* Annual costs exclude the initial purchase price. All costs, except initial cost, are discounted over the products' lifetime using a real discount rate of 4%. See "Assumptions" to change factors including the discount rate.

<sup>†</sup> A simple payback period of zero years means that the payback is immediate.

### Summary of Benefits for 100 Light Fixture(s)

Initial cost difference	<b>\$8,700</b>
Life cycle savings	<b>\$47,010</b>
Net life cycle savings (life cycle savings - additional cost)	<b>\$39,310</b>
Simple payback of additional cost (years)	<b>2.5</b>
Life cycle energy saved (kWh)	<b>321,930</b>
Life cycle air pollution reduction (lbs of CO <sub>2</sub> )	<b>460,360</b>
Air pollution reduction equivalence (number of cars removed from the road for a year)	<b>39.82</b>
Air pollution reduction equivalence (acres of forest)	<b>62.78</b>
Savings as a percent of retail price	<b>605%</b>

Assumptions for Residential Lighting Fixtures		
Category	Value	Data Source
<b>Power</b>		
<b>Ceiling Mounted Light Fixture</b>		
<b>ENERGY STAR Qualified Unit</b>		
Fixture Wattage	36 Watts	ICF 2001
Initial Cost per Unit	\$60	ICF 2001
Number of bulbs per fixture	2	ICF 2001
Annual Maintenance Cost	8.54	Calculated
<b>Conventional Unit (Incandescent)</b>		
Fixture Wattage	120 Watts	ICF 2001
Initial Cost per Unit	\$20	ICF 2001
Number of bulbs per fixture	2	ICF 2001
Annual Maintenance Cost	23.00	Calculated
<b>Torchieres</b>		
<b>ENERGY STAR Qualified Unit</b>		
Fixture Wattage	58 Watts	ICF 2001
Initial Cost per Unit	\$40	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	4.27	Calculated
<b>Conventional Unit (halogen)</b>		
Fixture Wattage	300 Watts	ICF 2001
Initial Cost per Unit	\$20	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	16.41	Calculated
<b>Recessed Can Lighting</b>		
<b>ENERGY STAR Qualified Unit</b>		
ENERGY STAR Fixture Wattage	16 Watts	ICF 2001
Initial Cost per Unit	\$87	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	4.27	Calculated
<b>Conventional Unit (Incandescent)</b>		
Fixture Wattage	65 Watts	ICF 2001
Initial Cost per Unit	\$10	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	11.4975	Calculated
<b>Suspended Downlight</b>		
<b>ENERGY STAR Qualified Unit</b>		
Fixture Wattage	36 Watts	ICF 2001
Initial Cost per Unit	\$80	ICF 2001
Number of bulbs per fixture	2	ICF 2001
Annual Maintenance Cost	8.54	Calculated
<b>Conventional Unit (Incandescent)</b>		
Fixture Wattage	100 Watts	ICF 2001
Initial Cost per Unit	\$50	ICF 2001
Number of bulbs per fixture	2	ICF 2001
Annual Maintenance Cost	22.995	Calculated
<b>Outdoor</b>		
<b>ENERGY STAR Qualified Unit</b>		
Fixture Wattage	19 Watts	ICF 2001
Initial Cost per Unit	\$60	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	4.27	Calculated
<b>Conventional Unit (Incandescent)</b>		
Fixture Wattage	60 Watts	ICF 2001
Initial Cost per Unit	\$20	ICF 2001
Number of bulbs per fixture	1	ICF 2001
Annual Maintenance Cost	11.4975	Calculated
<b>Desk Lamp</b>		
<b>ENERGY STAR Qualified Unit</b>		
Fixture Wattage	40 Watts	ICF 2001
Initial Cost per Unit	\$48	ICF 2001
Number of bulbs per fixture	1	Assumption
Annual Maintenance Cost	4.27	Calculated
<b>Conventional Unit (Incandescent)</b>		
Fixture Wattage	120 Watts	ICF 2001
Initial Cost per Unit	\$31	ICF 2001
Number of bulbs per fixture	1	Assumption
Annual Maintenance Cost	11.4975	Calculated
<b>Maintenance</b>		
Labor cost (per hour)	\$20	EPA 2004
Lamp installation time	0.15 hours	Assumption
<b>CFL</b>		
Bulb Replacement cost	\$10.0	ICF 2001
Lifetime	10000 hours	ICF 2001
Number of bulb replacement per year	0.33	Calculated
<b>Halogen</b>		
Bulb Replacement cost	\$6.99	ICF 2001
Lifetime	2000 hours	ICF 2001
Number of bulb replacement per year	1.6425	Calculated
<b>Incandescent</b>		
Bulb Replacement cost	\$0.5	ICF 2001
Lifetime	1000 hours	ICF 2001
Number of bulb replacement per year	3.3	Calculated
<b>Usage</b>		
Number of hours in "on" mode per day	9 hours/day	Assumption
Average number of hours in "on" mode per year	3,285 hours/year	Calculated.
Fixture Lifetime	20 years	LBNL 2004
<b>Discount Rate</b>		
Commercial and Residential Discount Rate (real)	4%	A real discount rate of 4 percent is assumed, which is roughly equivalent to the nominal discount rate of 7 percent (4 percent real discount rate + 3 percent inflation rate).
<b>Energy Prices</b>		
2004 Commercial Electricity Price	0.17 \$/kWh	EPA 2004
2004 Residential Electricity Price	0.12 \$/kWh	EPA 2004
<b>Carbon Emissions Factors</b>		
Electricity Carbon Emission Factors	1.43 lbs CO <sub>2</sub> /kWh	EPA 2003
<b>CO<sub>2</sub> Equivalents</b>		
Annual CO <sub>2</sub> sequestration per forested acre	7,333 lbs CO <sub>2</sub> /year	EPA 2003
Annual CO <sub>2</sub> emissions for "average" passenger car	11,560 lbs CO <sub>2</sub> /year	EPA 2003