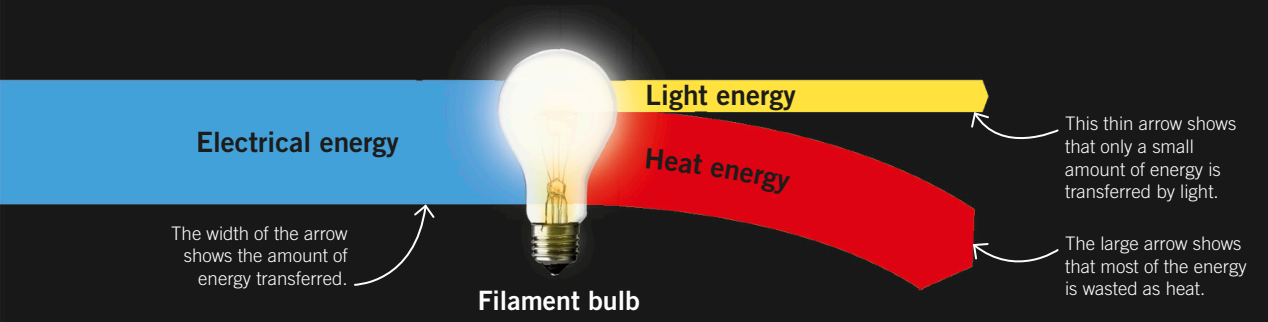
Efficiency

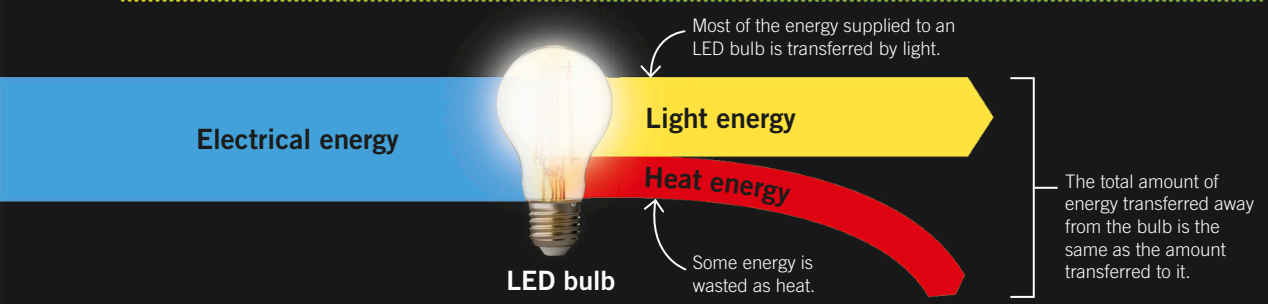
When you turn on a light, not all the energy is transferred to the surroundings by light—some of it is transferred to the air by heating. This is wasted energy. An efficient device is one that wastes only a small percentage of the energy it transfers.

Sankey diagrams
We can show how efficient a device is with a Sankey diagram. The diagrams here show that old-fashioned filament light bulbs have very low efficiency because most of the energy is transferred to the surroundings as heat. In contrast, an LED light bulb transfers most of its electrical energy to light and wastes only a small amount as heat.

Key facts

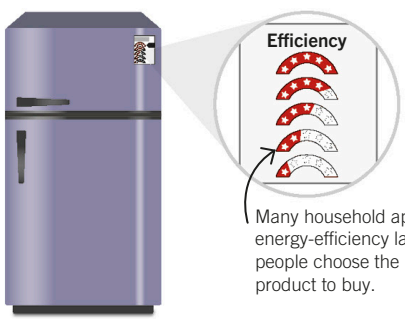
- ✓ **An efficient device wastes only a small percentage of the energy it transfers usefully.**
- ✓ **Sankey diagrams show efficiency.**
- ✓ **Energy-efficient devices help reduce our consumption of energy.**





Improving efficiency

All machines and devices waste energy, and that wasted energy ultimately escapes to the surroundings as heat. For example, bicycles waste energy through friction between moving parts. This can be reduced by keeping the chain and other moving parts lubricated. By using energy-efficient electrical devices in our homes, we can reduce how much energy we waste and so reduce our consumption of fossil fuels, which is good for the environment.



Many household appliances have energy-efficiency labels that help people choose the most efficient product to buy.