

Energy Cost Comparison: Old vs. New 100 HP Motor

Below are the typical energy costs for a standard 100 HP motor and a new motor using 40% less energy, based on common industrial electricity rates.

Old Motor (Standard Efficiency, 100 HP)

- **Annual Energy Use:**

A 100 HP motor running continuously (8,760 hours/year) at full load typically consumes about 80 kW^{[1][2][3]}.

- **Annual Energy Cost:**

- At \$0.10 per kWh: $80 \text{ kW} \times 8,760 \text{ hr} \times \$0.10/\text{kWh} = \$70,080$

(Industry sources cite annual costs between \$48,000 and \$70,000 depending on load and rate^{[1][3]}.)

- **Example from Plant Engineering:**

- \$70,000 per year at \$0.10/kWh for a 100 HP motor running continuously^[3].

New Motor (40% Less Energy Use)

- **Annual Energy Use:**

$80 \text{ kW} \times 0.6 = 48 \text{ kW}$

(40% reduction in energy use.)

- **Annual Energy Cost:**

- At \$0.10 per kWh: $48 \text{ kW} \times 8,760 \text{ hr} \times \$0.10/\text{kWh} = \$42,048$

- **Annual Savings:**

- $\$70,080 - \$42,048 = \$28,032$

- (Consistent with earlier calculations and industry examples.)

Summary Table

Motor Type	Power Use (kW)	Annual Cost (\$0.10/kWh)	Annual Cost (\$0.07/kWh)	Annual Cost (\$0.13/kWh)
Old Motor	80	\$70,080	\$49,056	\$91,104
New Motor	48	\$42,048	\$29,433	\$54,662
Annual Savings	—	\$28,032	\$19,623	\$36,442

Key Points

- **Old 100 HP motors** typically cost \$48,000–\$70,000 per year to operate at \$0.10/kWh, depending on actual load and efficiency^{[1][3]}.
- **A new motor using 40% less energy** would reduce annual energy costs to about \$42,000 at the same rate, saving you over \$28,000 per year.
- **Savings scale with your local electricity rate**—higher rates mean even greater annual savings.

For the most accurate estimate, use your actual motor's measured power draw, hours of operation, and your facility's electricity rate.