



Premium-Efficiency Motors

Invest in Premium-Efficiency Motors and watch the savings add up.

Have you ever wished for a capital investment that could repay many times its original value over the next 20 years? Well, here it is, and at the same time, this investment can improve equipment reliability, reduce downtime and repair costs, and result in lower releases of carbon dioxide to the atmosphere.

The investment is straightforward: electric motors with the highest electrical energy efficiency based on your needs. Energy-efficient motors pay for themselves in a few years or sometimes even a few months, after which they will continue to pile up savings worth many times their purchase cost for as long as they remain in service. That's another way of saying that operating costs, not just first cost, are what you should look at when buying a new motor.

Value for your business

Example of annual savings due to using NEMA premium-efficiency motors instead of motors that just meet the EPCAct energy-efficient motor standard.

HP	Full-load Motor Efficiency (%)		Annual Energy Savings from use of a NEMA Premium-Efficiency Motor	
	Energy-Efficiency Motor	NEMA Premium-Efficiency Motor	Annual Energy Savings, kWh	Dollar Savings, \$/year
5	87.5	89.5	572	\$49
7.5	88.5	91.0	1,042	\$89
10	89.5	91.7	1,200	\$102
15	91.0	93.0	1,587	\$135
20	91.0	93.0	2,116	\$180
25	91.7	93.6	2,477	\$211
50	93.0	94.5	3,820	\$325
75	94.1	95.0	3,380	\$287
100	94.1	95.4	6,482	\$551

Note: Based on 8,000 hours per year, 1800 RPM, Open-Drip Proof (ODP), 75% load and an electrical rate of \$.085/kWh.

Energy-Efficiency Motor: Energy Policy Act (EPA) of 1992

NEMA Premium-Efficiency Motor: NEMA MG 1-2003 Table 12-12

Source: U.S. Department of Energy, Energy Tips - Motor Systems Tip Sheet

INVEST IN PREMIUM-EFFICIENCY MOTORS AND WATCH THE SAVINGS ADD UP

Who can participate?

Any commercial building or business – if you have questions, contact East Central Energy.

What you'll receive

Rebates will apply only to new premium-efficiency motors, not rewound or repaired motors, for new installations. Rebates apply to motors from 1 hp to 200 hp when they meet or exceed premium efficiency standards and offer the following features:

- AC polyphase induction motor
- Squirrel cage rotor design
- NEMA design B torque characteristics
- Synchronous speeds of 3600, 1800, 1200 rpm

The nameplate of the new motor must clearly state the National Electrical Manufacturers Association (NEMA) premium efficiency in order to qualify for rebates.

What you need to do

- You are responsible for checking with East Central Energy to verify funding availability and program parameters.
- Installation must be complete before funds will be issued.
- Itemized invoices from equipment vendors must accompany rebate application.
- Invoices must itemize labor charges, quantity and price of the equipment installed.
- Invoices must include manufacturer and model numbers for the installed equipment.
- East Central Energy reserves the right to conduct inspections.
- The maximum rebate amount is limited to 50% of the project costs, up to \$50,000.

Source: Premium-Efficiency Motors and Transformers, CDA, 2008

Motor upgrade savings example

ABC Printing replaced an old, 75-hp standard-efficiency boiler forced-draft fan motor with a NEMA premium-efficiency motor. The existing motor operates at a 75% load for 8,000 hours per year with an efficiency (n std) of 91.0%. Determine the annual energy savings if the replacement motor has an efficiency (n PE) of 95.4% and electricity is priced at \$0.085/kWh.

$$\text{Energy Savings} = \text{hp} \times \text{load} \times 0.746 \times \text{hours} \times (100/\text{n std} - 100/\text{n PE}) = 75 \times 0.75 \times 0.746 \times 8,000 \times (100/91 - 100/95.4) = 17,014 \text{ kWh/year}$$

$$\text{Energy Cost Savings} = 17,014 \times \$0.085 = \$1,446/\text{year}$$

Over a 10-year operating period for a 75-hp motor, the purchase price might represent just 2% of the total motor installation and operating costs. Energy and maintenance costs account for the remaining 98%. Even a small improvement in motor operating efficiency can produce significant energy and dollar savings and provide a rapid return on investment.

Contact us

If you have any questions or need assistance in making these savings a reality for your business, please contact your strategic accounts representative at East Central Energy, 1-800-254-7944 or www.eastcentralenergy.com.

