

# Motor and Drive Efficiency

## Motors, Variable Frequency Drives (VFDs) and Constant Speed Controllers

### Increase your profits with energy-efficient motors and drives

NEMA Premium® efficiency motors can reduce your energy bill and improve efficiency, productivity and energy conservation. All this can help boost your competitive edge and your bottom line.

### Reduce your maintenance expense

Efficient motors and drives can reduce down time associated with equipment replacement and repair. They also reduce internal energy losses, generate less heat and outlast standard-efficiency equipment.

### Our rebates help offset up-front costs

Earn cash rebates when you install higher-efficiency motors or a drive to existing motors. Larger rebates are available for even higher efficiencies. Our “Enhanced” efficiency thresholds are 1% higher than NEMA Premium. Motors must meet or exceed this threshold for the enhanced rebate amount.



Motors		
Description	Horsepower	Rebate
Prescriptive rebates are available for new motors (where one never existed or is not operable – Plan A), or upgrading operating (working) motors (Plan B).	1 hp–200 hp	Rebate varies by hp, motor scenario, and efficiency level.
Motor Upgrade	1 hp–200 hp	
Custom Motor	> 200 hp	Individually determined up to \$400/kW saved. <b>Preapproval is required.</b>

Drives		
Equipment	Criteria	Offer
Prescriptive VFDs	Used on fans or pumps 1hp–200 hp	Rebate varies by hp. See rebate schedule on page 3.
Custom VFDs (requires preapproval prior to purchase and installation)	Non-fan or non-pump, or >200 hp	Individually determined under the Custom Efficiency program.

See program application for details and eligibility requirements.

### Discover Your Savings Potential

Call your Xcel Energy account manager or an energy efficiency specialist at **1-855-839-8862** for program details, rebate levels and more.



## Constant Speed Motor Controllers

A constant speed motor controller optimizes the motor voltage at partial loads and reduces magnetic losses in the motor core. This device can reduce the electrical demand and energy consumption of the electric motor during lightly loaded operation, while maintaining constant RPM.

Applications include:

- Escalators
- People movers – moving sidewalks
- Any industrial/commercial applications that cannot be shut off or slowed down during normal business operation, and operate at a load factor of less than 20 percent more than 65 percent of the time

Equipment	Criteria	Offer
Prescriptive Controllers	5 hp to 500 hp	\$15/hp
Custom Controllers	> 500 hp	Individually determined under the Custom Efficiency program (Custom program requires preapproval prior to purchase)

The rebate is calculated using the lowest rating of either the controller nameplate or the motor nameplate for the specific line item's end use.

### Operating is Expensive

Motor-driven equipment accounts for 64 percent of the electricity consumed by U.S. industries. Energy-efficient motors can cut this energy use by at least 12 percent.

(Source: U.S. Department of Energy).

### Buy Smart and Save

The lifetime energy use of a motor will cost you more than the initial capital outlay. Your initial purchase price is actually just 2 percent of a typical large motor's life-cycle cost.

### Start a Motor Replacement Plan

Having a purchase plan in place will help you prepare for eventual motor failure. You don't want to rush this important purchase decision because a wise investment can help you save substantial energy costs.





## Add VFDs to your motors and drive energy costs down

Variable frequency drives (VFDs), or adjustable speed drives, operate on an as-needed basis and improve operating efficiency, which saves you energy and money. You'll also reduce maintenance and may extend the life of your motor equipment.

### Best Uses for VFDs

The greatest potential for using drive technology to improve your operation exists when:

- There is a verifying load on the motor
- Systems run for a high percentage of operating time
- A motor currently has a damper, control valve, modulator or other mechanical control device

### What Can VFDs Offer Your Business?

- Greater speed control on AC motors, which allows you to remove throttling devices, valves and dampers
- The ability to precisely regulate speed, which may prolong equipment life and lower maintenance costs for motors, driven equipment and switchgears
- The ability to fine-tune your controls, resulting in more precise process operations and improved product quality and reliability

#### Eligible Applications

##### Prescriptive Drives

- HVAC Fans
- Pumps
- Cooling Towers
- Industrial Fans

##### Custom Drives

- Chillers
- Refrigeration Compressors
- Air Compressors
- Presses
- Process Equipment
- Extrusion Chillers

##### Not Eligible

- Soft-start
- Power-factor Correction

Program restrictions may apply. Please contact our energy efficiency specialists at **1-855-839-8862** for program details, rebate levels and more.

#### Drive Rebate Offer

Prescriptive rebate levels for drives that operate pump or air movement devices; maximum rebate is 60% of installed cost

Motor HP	Drives Tiered HP	Motor HP	Drives Tiered HP
1	<b>\$400</b>	50	<b>\$4,900</b>
1.5	<b>\$500</b>	60	<b>\$5,600</b>
2	<b>\$500</b>	75	<b>\$6,600</b>
3	<b>\$600</b>	100	<b>\$7,700</b>
5	<b>\$900</b>	125	<b>\$8,600</b>
7.5	<b>\$1,130</b>	150	<b>\$9,500</b>
10	<b>\$1,350</b>	200	<b>\$10,500</b>
15	<b>\$1,800</b>	Larger than 200	Drives on non-fan or non-pump motors, or equipment larger than 200 hp will be evaluated via Custom Efficiency
20	<b>\$2,300</b>		
25	<b>\$2,750</b>		
30	<b>\$3,200</b>		
40	<b>\$4,000</b>		

## Plan ahead to reduce cost and stress associated with motor replacement

Unfortunately even the most reliable motors don't last forever. Eventually you'll need to replace your equipment. Having a motor purchase plan in place before it fails will ease the transition to a new system. And, you don't want to rush this important purchase because a wise investment can help you save substantial energy. With a little planning you can reduce your equipment purchase cost, reduce down time and even reduce stress when it is time to replace your motors.

### Get the Most Out of Your Upgrades and Rebates

#### 1. Create an inventory list

- Identify the replacement motor inventory you'll need
- Address the critical motors first
- Keep your records, and make them available to maintenance professionals

#### 2. Develop a Plan—Choose to repair, replace or rewind

- Determine break-even point
- Communicate with management regarding the economics

#### 3. Create the specifications list

A list identifies the basic requirements and performance characteristics needed. Be sure to include:

- NEMA Premium® and "Enhanced" Efficiency Motors
- Same voltage and frequency as the facility where the motor will operate
- NEMA frame sizes (feet, inches) on new equipment for future replacement
- Specialty motors like non-NEMA, metric, DC that will work with NEMA motors and drives
- Speed equal to the motor being replaced

#### 4. Select a quality vendor

#### 5. Create a schedule for decisions, procurement, repair, prevention and predictive maintenance

For equipment that doesn't qualify for prescriptive rebates, contact Xcel Energy BEFORE purchase—custom rebates may be available!



### 1-2-3 Get Started Now!

#### 1. Complete your Motor or Drive Efficiency Rebate Application

#### 2. Attach your dated customer invoice to the manufacturer's equipment specification data sheet

#### 3. Submit forms to your account manager (if applicable),

or email to:  
energyefficiency@xcelenergy.com  
(preferred),

fax to: 1-800-311-0050,

or mail to: Xcel Energy  
**Energy Efficiency Specialists  
Business Solutions Center  
P.O. Box 8  
Eau Claire, WI 54702**

For more information call your Xcel Energy account manager, or an energy efficiency specialist at **1-855-839-8862**.