



*Greater efficiency supports patient care.*

## Replace Motors with Premium Efficiency Motors

*All ECM content was independently developed and reviewed to be vendor, product and service provider-neutral.*

### Description

With the number of motors present in commercial buildings, replacing standard efficiency motors with premium efficiency motors can save a considerable amount of energy without modifications to operating schedules. This is important in hospitals as there are areas that cannot be “set back” like more traditional commercial buildings.

### Project Talking Points

- Motors are used in commercial buildings to drive pumps, air handling unit (AHU) fans and exhaust fans. There can be hundreds of fans running at a given time in a single hospital, many of which have much longer run times than a traditional commercial building.
- Federal requirements for minimum full-load efficiency and electrical utility motors have increased motor efficiency across the board.
- Due to the age of many hospitals, there is a great opportunity to replace motors on original equipment.
- Many motors are repaired or “rewound.” If an old motor does not meet the new standards, consider replacing it rather than rewinding.
- Ensure all purchasing specifications are updated to only include premium efficiency motors when considering purchasing spare or new motors.

### Benefits

- **Cost benefits:** Replacing standard efficiency motors with premium efficiency will lower energy use and, in turn, energy cost.
- **Environmental benefits:** Reducing energy use will reduce the facility’s carbon footprint and greenhouse gas emissions.
- **Social benefits:** Reductions in hospital operating costs will result in a decreased cost to consumers and more funding for patient care.

### Purchasing Considerations



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Be sure to reference the facility's utility provider and/or the [Database for State Incentives for Renewables and Efficiency \(DSIRE\) website](#) to check for any energy efficiency rebates available on premium efficiency motors.

### **How-To**

1. Engage all relevant parties. This will likely include facilities staff, purchasing staff, clinical staff and any vendors that may be supplying or installing motors.
2. Take inventory of all motors in the facility by noting the following:
  - Performance information: horsepower, voltage, amperage and revolutions per minute (RPM)
  - Model number
  - Equipment served
  - Area served
  - Efficiency
3. Implement a purchasing policy and construction standards for the minimum efficiency of motors on all new equipment.
4. Coordinate with staff in the areas that will be affected by a potential shutdown of their heating, ventilation and air conditioning (HVAC) system.
5. Perform payback calculations to determine if it is worth replacing any motors before the end of their useful life or replacing any stock motors with more efficient models.
6. Replace any motors meeting the payback standards. The remainder will be candidates for rewinding.
7. Establish a baseline for current energy consumption to discover ECM synergies.

### **Case Studies**

- Bryant University, Smithfield, RI
  - [Bryant University Saves Energy, Cuts Costs with All-Copper Systems](#)

### **Resources**



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- Many motor manufacturers will have energy savings calculators on their websites.
- Institute of Electrical and Electronics Engineers (IEEE): [Standards for Super-Premium Efficiency Class for Electric Motors](#)
- National Electrical Manufacturers Association (NEMA): [NEMA Premium Motors](#)
- U.S. Department of Energy: [Premium Efficiency Motor Selection and Application Guide, February 2014](#)
- U.S. Department of Energy Motor Challenge: [Buying an Energy Efficient Electric Motor](#)

### **Regulations, Codes and Standards, Policies**

- [Energy Independence and Security Act of 2007](#)

### **ECM Descriptors**

#### **Energy**

Category List:

- Building and maintenance
- **Controls**
- HVAC

ECM Attributes:

- Basic device upgrades
- System upgrades

Improvement Type:

- Retrofit/renovations
- New buildings
- Operations and maintenance

Department:

- Engineering/facilities management