ComEd's *Smart Ideas for Your Business*℠

FACT SHEET

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HVAC

Heating, ventilation and air conditioning can account for as much as 30 percent of a building's annual energy use. Increasing the energy efficiency of an HVAC system can be accomplished in one of three ways:

- Replacing the current system with a properly sized, more efficient system
- Retrofitting elements of the current system with variable speed drives (VSDs)
- Maintenance activities, such as insulating pipes and keeping equipment free of scale and corrosion

Incentives from ComEd's *Smart Ideas for Your Business*℠ program make upgrades more affordable and accelerate your payback period.

UNITARY AND SPLIT AIR CONDITIONING SYSTEMS AND AIR SOURCE HEAT PUMPS

Unitary or "packaged" air conditioning and heat pump equipment is widely used in the United States. New unitary air conditioning units or air source heat pumps (split systems or single package units) that meet or exceed specific efficiency ratings are eligible for prescriptive incentives of $15–$30 per ton based on the size of the unit.

Water-cooled systems, evaporative coolers and water source heat pumps do not qualify for prescriptive incentives but may qualify for custom incentives.

WATER- AND AIR-COOLED CHILLERS

Chillers are primarily found in larger buildings — almost 40 percent of 100,000-square-foot buildings in the United States use chilled water systems. The annual energy cost for operating a chiller can be as much as one-third of its purchase price, so replacing an old or oversized chiller with a properly sized high-efficiency chiller can mean substantial savings. Selecting a new chiller based on the actual conditions under which it will operate rather than full-load, standard-condition ratings can contribute to energy efficiency gains. Chillers with integrated VSDs are highly efficient in many cases.

An office building in the Chicago suburbs operated its HVAC system at approximately 3,120 hours in the spring and summer months. Installing three variable speed drives (VSDs) on the existing HVAC system will save almost $2,000 a year. After the $4,000 incentive from ComEd's *Smart Ideas for Your Business* program, the upgrade will pay for itself in less than five years.

New chillers, including those with integrated VSDs, are eligible for incentives of $20–$40 per ton, based on size, if they meet the specified integrated part load value (IPLV) for the compressor type used.

SMALLER AC UNITS

Room air conditioning units and packaged terminal AC and heat pump units (PTAC/PTHP) — self-contained through-the-wall or built-in units sized 2 tons (24,000 Btuh) or less — may qualify for incentives of $30–$50 per ton if they meet specific standards.

USING VARIABLE SPEED DRIVES TO SAVE ENERGY

Installing VSDs on existing chillers and HVAC fans, pumps and packaged units can dramatically increase efficiency — and qualify for incentives ranging from $25 to $50 per horsepower.

VSDs control air, water or refrigerant flow by varying the speed of the motor driving the pump or fan rather than using a valve or damper, thus ensuring that the pump or fan performs at maximum efficiency at part-load conditions. Using a VSD rather than a mechanical means of flow control has significant advantages. For centrifugal fans or pumps with no static lift, the fluid or air flow provided varies directly with the pump or fan

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rotational speed. However, the input power requirement varies as the cube or third power of the speed ratio. Thus small decreases in equipment rotating speed or fluid flow yield significant reductions in energy use. For example, reducing speed (flow) by 20 percent can reduce power requirements by approximately 50 percent.

The most common cost-effective applications of VSDs for HVAC units include:

- Cooling tower fans
- Chilled water pumps
- Centrifugal refrigerant compressors found in large chillers
- Air-moving fans and blowers

VSDs installed on existing chillers, HVAC fans, HVAC pumps and package units are eligible for an incentive of $25 per horsepower for chillers and $50 per horsepower for fans and pumps. VSDs on new equipment are not eligible for an additional incentive.

DEMAND CONTROL VENTILATION FOR KITCHEN EXHAUST HOODS

Similarly, variable frequency drives (VFDs) can ensure air quality while minimizing energy usage in food service kitchens. Microprocessor based controls (a temperature sensor installed in the hood exhaust collar and optic sensors that detect the presence of smoke or cooking) and VFDs regulate fan speed based on cooking load, time of day, kitchen comfort and indoor air quality. These systems can reduce a fan's energy consumption by 30 to 50 percent. Because air from the heating and air-conditioning systems is lost through kitchen hoods, HVAC system energy consumption can also drop by 20–30 percent.

Energy savings could mean a rapid payback, which could be made even faster with a $300–$400 incentive from ComEd's *Smart Ideas for Your Business* program.

CALCULATING ENERGY SAVINGS

Calculating energy savings for HVAC upgrades is complex. A useful online energy savings calculator is available on the U.S. Department of Energy's Web site at www1.eere.energy.gov/calculators/industry.html.

A rough estimate of your energy savings can be calculated using the following steps:

- Multiply your *existing* power consumption in kilowatts by the number of hours you run the air conditioning per year
- Multiply your *proposed* power consumption in kilowatts by the proposed hours of operation and subtract this number from the first
- The difference is your potential annual savings in kilowatt hours
- To determine your potential annual dollar savings, multiply the annual kWh savings by the rate you pay

Simple payback in years can be calculated by dividing the project cost by the annual savings. By reducing the project cost, the financial incentives that ComEd's *Smart Ideas* program provides will accelerate the payback and help get the project approved.

(*Existing* Power Consumption (kW) X Hours of Operation) − (*Proposed* Power Consumption (kW) X Hours of Operation) = Potential Energy Savings in kWh

FIVE SMART IDEAS FOR YOUR BUSINESS

1. Boost your bottom line by cutting energy costs.
2. Safeguard the environment by reducing emissions.
3. Reduce maintenance demands and related downtime.
4. Distinguish your business as a leader in saving energy and protecting the environment.
5. Use cash incentives to reduce up-front costs and shorten payback periods.

CONTACT US

For more information about ComEd's *Smart Ideas for Your Business* visit **www.ComEd.com** or call **888-806-2273.**

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