

The dramatic increase in Colorado's Electricity and Natural Gas Rates has made it difficult to control overhead costs when operating warehouses, automobile dealerships, restaurants, grocery stores, and other facilities. Here are 10 Quick and Easy Ways to save money on your facility's utility bills through your heating, cooling, lighting, and power usage systems.

1. ADJUSTING BELTS - Improperly adjust V-belts rob the drive train of power, create noise, and require replacement sooner than well-adjusted belts. Loose belts slip on pulley wheels, causing torque loss and rapid wear. Belts that are too tight put an excessive load on the motor and fan shaft bearings, causing early failure of the bearings or belts. Belts should be aligned with a straight edge to prevent lateral wear. Proper belt tension can be achieved with a deflection strain gauge or trained technician. Some technicians suggest belt changes once or twice a year, and some let the belt run until they break. It makes good sense to change the belt before it breaks, since these are not very expensive. An easy upgrade is to use a cogged V-Belt vs. a standard V-Belt. The cogged V-Belt can improve pulley efficiency by 2 to 8 percent but it costs a bit more.

2. EQUIPMENT CABINET INTEGRITY - An amazing number of rooftop units spill much of their expensive chilled or heated air onto the roof. The reason: poorly designed or poorly maintained cabinet hardware. Annual checkups should include a survey of air leaks, followed by corrective measures such as replacing screws or latches and patching or replacing gaskets. Cabinet integrity is particularly important on the supply-air side, where high pressure created by the fan can force considerable air out a small crack. Loosing 200 cubic feet of air per minute (cfm) from a 10 Tr (Ton) rooftop unit reduces cooling and airflow capacity by about 5 percent and wastes more than \$100 US per year in energy costs (9.0 SEER, 2,000 hours of operation at 8 cents per kilowatt-hour). Another potential source of air leakage is the condensate drainpipe that leads out from the pan under the evaporator coil. A narrow pipe section of U-Bend water trap can reduce or eliminate this type of leak. Make sure all covers are sealed well and all screws are installed.

3. CHANGING FILTERS - Filters play two important roles, they help maintain indoor air quality and they protect downstream components of an air-handling system (the evaporator coil and fan) from accumulating dirt that impairs the systems performance. Filter changing intervals can be based on pressure drop across the filter or (more commonly) by calendar

scheduling or visual inspection. Scheduled intervals should be between one and six months. Depending on the pollutant loading from indoor and outdoor air. More frequent changes may be required during the economizer season, because outdoor air is usually dirtier than indoor air. *If your facility is near a highway, cottonwood trees or open fields your changes could be every other week!*

4. CLEANING CONDENSER COILS - Unlike the evaporator coil, the condenser coil is exposed to unfiltered outdoor air so it suffers much greater degradation due to dirt. The performance penalty of a dirty condenser makes this task one of the most cost-effective energy efficiency practices available for cooling equipment maintenance. A dirty coil reduces the cooling ability of the air blowing across the condenser coils. If the condensing temperature is raised from 95°F to 105°F as a result, then cooling capacity will be cut by 7 percent and increase power consumption by 10 percent. With a net compressor efficiency reduction of 16 percent! Such performance loss in a 10 SEER unit for 2,000 hours per year at 8 cents per kilowatt-hour waste about \$250 US per year in operating costs. Even though you can do this in-house, sometimes this is best performed by a qualified technician, as the aluminum fins on most condenser coils are very susceptible to damage and very difficult to repair or straighten. Some manufacturers condenser coils require that the coils be disassembled and separated to be thoroughly cleaned, and this should be done by a trained technician.

5. ROOFTOP UNIT ECONOMIZERS - Many air-conditioning systems use a dampered vent called and economizer to draw in cool outside air when it is available to reduce the need for mechanically cooled air. If the linkage on the damper is not regularly checked it can seize up or break. *An economizer stuck in the full open position can add as much as 50% to a buildings annual energy bill by allowing hot air in during the air-conditioning season and cold air in during the heating season!* In-house it is possible to have someone check the position of the dampers, but it is best to have a qualified technician calibrate the controls; check, clean, and lubricate the economizer's linkage about once a year; and make repairs if necessary.

6. CHECK AIR CONDITIONING TEMPERATURES - With a thermometer, check the temperature of the return air going to your air-conditioning unit. Then check the temperature of the air coming out of the register nearest the air-conditioning unit. If the temperature difference is less than 14°F or more than 22°F have a licensed technician inspect your air-conditioning system.



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7. THERMOSTAT SETTINGS - Ideally humans are most comfortable at about 72°F to 74°F in the summer depending on the humidity level, and 74°F to 76°F in the winter. Consider turning up the indoor temperature a few degrees in the summer and turning it down a few degrees in the winter. Employee's and customers will naturally adjust small changes over time. If you have a lot of customers at your facility, you may have to many complaints and end up losing customers.

8. THERMOSTAT LOCKING COVERS - Consider installing locking covers on your thermostats. In facilities where there are lots of people, you will find individuals turning the temperature up and down throughout a day causing your heating and cooling systems to run very inefficiently trying to catch up to the changed settings!

9. INSTALL T8 FLORESCENT LAMPS - If your facility uses T12 fluorescent lamps, relamping with the latest T8 lamps and electronic ballasts can cut 35 percent off of your lighting bill! Adding specular reflectors, new lenses, and occupancy sensors or timer can double the savings. Paybacks of one to three years are common.

10. SWITCH TO COMPACT FLUORESCENT LAMPS - Replacing incandescent bulbs with Compact Fluorescent Lamps (CFLs) not only saves energy, but the bulbs also last much longer and save on maintenance. One restaurant owner replaced 20 100-watt bulbs with that used less energy, helping the restaurant to save more than \$400 per year. CFL's are now available in 2700-kelvin models that product a warm color tone similar to that of incandescent lamps.



This is only touching the surface of ways that a building owner/operator can save on energy consumption. At Rocky Mountain Mechanical we specialize in the design, installation sales and service of commercial / industrial heating, cooling, and control systems for:

- *Building Comfort and Air Quality*
- *Process & Manufacturing*
- *Cold Storage Facilities*

