

■ Heating, Ventilating, and Air Conditioning Checklist

□ **Deploy Operation and Maintenance Programs**

Operation and Maintenance (O&M) programs targeting energy efficiency can save between 5% and 20% on energy bills. In these programs, make sure that the system is operating efficiently by calibrating system sensors, replacing air filters, cleaning coils, periodically retro-commissioning equipment, detecting leaks, monitoring oil levels, and verifying the operation of system components.

□ **Install Programmable Thermostats**

Set up the thermostat to adjust the space temperature according to the 7-day occupancy schedule. These thermostats should have manual override settings for uncharacteristic weather conditions and off-schedule occupancy. The thermostats should be checked periodically to verify the correct settings are in place. This is also a good time to revise thermostat setpoints. Just lowering the temperature by a few degrees in the winter and raising it by a few degrees in the summer can have a large impact on energy usage.

□ **Replace Pneumatic Sensors with Electronic Sensors**

All room humidistats and pneumatic thermostats should be replaced with electronic humidistats and thermostats that can be tied into the direct digital control (DDC) system. All variable air volume (VAV) damper actuators should also be tied into the DDC system, rather than being controlled by a pneumatic thermostat. With electronic sensors, all components can be monitored with the DDC system.

□ **Consider Using a Solar Ventilation Preheating System for Combustion Air**

Solar ventilation preheating decreases the amount of energy needed to preheat outside air. The solar preheating system requires no maintenance and has a quick payback (6 to 7 years in some cases).

□ **Install Dedicated Outside Air AHUs**

Dedicated outside air AHUs should be considered in major renovation or retrofit projects and an experienced HVAC designer should be consulted for implementation. Dedicated outside air AHUs can be installed to provide outside air for the facility and all of the air can be dehumidified from a single AHU and allow for incorporation of energy recovery systems. This allows for higher discharge air temperature setpoints on the remaining AHUs and can save significant cooling energy use.

□ **Exhaust Air Energy Recovery**

Enthalpy wheels, energy recovery ventilators, and runaround heat recovery systems should be considered in cold climates and at installations with high utility rates.