TOGETHER**WE**SAVE EASY ENERGY TIPS

Schools

Heating and Air Conditioning

Schools consume most of their heating energy when the building is empty. During occupied times the heat from the lighting, equipment, and students is enough to keep the building warm. In the summer these same heat sources, along with the sun, cause schools to consume most of their cooling energy during the daytime hours.

- There are many recommendations concerning thermostat settings. The most practical approach is to get the teachers and office personnel to find a comfortable temperature, set the thermostat and forget it. At night in the winter, the temperature should be set to 58°. Because of Kentucky's humid environment, the night time temperature in the summer should only be set 3° higher than the daytime temperature.

- In buildings heated electrically, either with a central boiler or room heat pumps, stagger the times at which different parts of the building are brought up to occupied temperature in the morning. This strategy will prevent a large demand charge on the electric bill.

- Make sure heating and cooling vents are open and not blocked by furniture or other objects.

- Don't heat and cool the great outdoors. Close exterior doors and windows when heating or air conditioning is on.

- Windows that are never opened and are not needed to be opened for safety reasons should be screwed shut and caulked to prevent air leakage. Awning-type windows are particularly bad about leaking air.

- If possible, close outdoor air intake vents when the school is unoccupied. Fresh air is only needed when students are present. At night the fresh air can account for up to half of the heating needs of the building.

- Inspect all ductwork and insure that it is connected tightly. Seams and connections should be sealed with a mastic specifically made for HVAC ducts.

- Refrigerant levels should be verified, and heat transfer fins cleaned in air conditioners and heat pumps on a regular basis. Low refrigerant levels and dirty fins will reduce equipment efficiency and increase utility costs. These conditions can also increase maintenance costs and shorten equipment life.

- Clean and/or replace filters monthly when school is in session.

Lighting

Lighting retrofits are the surest way of saving energy. For example, if an old 4-foot, 4-lamp fluorescent fixture is retrofit or replaced with appropriate lamps and ballast, its energy use can be reduced by 46% with no reduction in light output.

- Teachers and administrators should turn off the lights when they leave a room.

- Lights in the cafeteria and the gymnasium should only be on when they are needed. They should not automatically be turned on first thing in the morning.

- Install occupancy sensors in closets and rarely used spaces.

Kentucky's Touchstone Energy® Cooperatives

- Use energy-efficient lighting. Replace incandescent bulbs with compact fluorescent lamps. Replace fluorescent T-12 bulbs with more efficient T-8 bulbs. Replace high bay metal halide gymnasium fixtures with high bay fluorescent fixtures.

Fluorescent Lighting Myths

1) <u>Leaving fluorescent lights on is cheaper than turning them off for brief periods of time</u>. Actually turning off lights saves energy, extends overall lamp life, and reduces maintenance. Turning off a 4-foot lamp for just ½ hour per day will save enough energy over the life of the tube to pay for the tube.

2) <u>Lights shouldn't be turned off because it shortens lamp life</u>. This is true fluorescent lamps will run more hours if run continuously, but they will last more years if they are turned off when not needed.

- Replace the two 20 watt incandescent bulbs in exit lights with 3 to 7 watt LED retrofit kits. Not only is there a savings in energy but the LED lights last up to 25 years making for a sharp reduction in maintenance costs.

Kitchen

In all-electric schools, the peak electrical load in the building probably occurs early in the morning when the building is reheated for classes. If it is not all-electric then it is quite possible that the kitchen will drive the peak electrical load. This will be from any electric cooking equipment in the kitchen as well as the booster heater for the dishwasher.

- If using electric cooking equipment, stagger the turn on times so the school does not have an unusually high electrical load during kitchen start-up.

- Minimize the use of range tops, griddles and broilers. Opt instead whenever possible to use ovens, steamers, and fryers.

- Keep heat reflectors clean and polished.

- Periodically recalibrate the broiler thermostats.

- Clean and check the burners regularly.

- Eliminate the use of booster heaters on dish-washing equipment by using an approved chemical rinse.

Building Envelope

The condition of the building envelope drives the need for heat. Anything that leaks air - windows, doors, open vents, etc. - greatly increases the heating load. The air conditioning load is primarily driven by the heat from the students and the lights. But it is also driven by heat absorbed by the roof and sunlight coming in through the windows.

Besides those measures listed under HVAC, the following measures should be considered.

- Use effective window treatments (blinds, shades, etc.), storm windows over regular single pane windows, or various types of solar screening or reflective films on the outside of the windows to cut energy costs. This is particularly important on southern and western exposures.

- Make sure that weather-stripping, sweeps, and caulking around and under exterior doors and windows is in good repair and that the doors seal properly when closed. Individually air leaks may seem small, but the leaks throughout a building can easily equal leaving a window open 24 hours per day, seven days per week.

- Consider the use of reflective roofing materials or coatings to reduce air conditioning costs. Coatings recommended by The Department of Energy can reduce the school's air conditioning load by 10% to 20%.

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