Newsletter 92 – Early Winter - 2005

Money-saving Cold Weather Strategies

It's that time of year again. The holidays are past, and January-February weather is settling in. Although it varies from year to year and building to building, about half the annual heating energy is used in January and February. Here is our advice on how to reduce heating costs:

Lower the interior temperature during unoccupied times.

Since many religious buildings are unoccupied for more hours than they are occupied, the temperature of vacant spaces is more important than the temperature of occupied spaces. And, most of the unoccupied times are overnight when there is no heat from the sun, lights, appliances and people.

Several years ago, we measured the interior temperature of a church for 13 months. In the spring, summer and fall the shell and components of the church endured natural swings in temperature of 27°F. So, the same swing can occur in the winter. So, if your congregation is comfortable at 72°F, for example, then the interior temperature could be lowered to 45°F when it is not occupied, as long as you don't freeze water in pipes.

Vary the low thermostat setting

The unoccupied temperature does not have to be the same all the time. If the outside temperature is 45°F or 50°F, you may not need any heat at all. If your clock thermostat warms the space to 55°F or 60°F on such a day, you could be wasting heat energy. So, you can continually adjust the lower temperature on a clock thermostat to the varying weather conditions outside. When making beautiful music, the organist is more important than the organ. When saving heat energy, thermostat settings are more important than the thermostat.

How can you tell what the low temperature actually is? One way is to visit the building very early in the morning – perhaps 2am or 3am. Another is to install maximum/minimum thermometers, particularly in places that are vulnerable to freezing temperatures.

Insure against freeze-ups

In areas that could freeze, you could install freeze-protection thermostats. Such a thermostat might be set at 37°F or 40°F and wired in parallel with the clock thermostat to control the appropriate valve, pump or burner. You probably should cover the thermostat with a locking enclosure to prevent tampering.

Close ventilation openings

Older religious buildings were built when air conditioning had not been invented. In place of air conditioning, many of the older buildings have ingenious natural ventilation systems to remove hot air in the summer. If these are left open by mistake in the winter, they effectively remove large amounts of air your congregation has paid to heat. If you feel a lot of drafty air coming into your worship space, the vents may be open, and should be closed.

Assure the heating system is in tune

Improving the combustion efficiency of your boiler may save considerable heating costs. The average worship/education building in our database of hundreds of buildings is about 16,800 square feet and uses about 9,000 CCF of gas or 7,000 gallons of fuel oil per year. Even improving it from 79% to 82% could save an easy $300 to $400 per heating season.

Heat with fuel oil

Currently, the cost of fuel oil is usually less than the cost of natural gas for the same heat energy. To make this calculation, find out how much a gallon of fuel oil would cost your congregation. The equivalent cost of cost per gallon of fuel oil is the cost of a CCF of natural gas, times 1.35. For example, the Philadelphia Gas Works' Rate BPS-S price for interruptible gas during the month of January 2005 is $12.75 per MCF, which is $1.275 per CCF. Therefore, fuel oil less than $1.72 per gallon is cheaper to heat with.

Buying Wind Energy

Summit Presbyterian Church decided to move the market for electricity toward renewable sources by purchasing blocks of electricity generated from the wind. One of Summit's proponents of wind power was Reverend Bert Froom, who says, "Even though it cost us a little bit more, the congregation decided to do the right thing and buy wind power."

Pennsylvania commercial customers already support more than 100 megawatts of wind generation in the state-more than any other state east of the Mississippi. For more information about PECO WIND or to sign up, customers can call 1-866-WIND-321, or see www.pecowind.com. Community Energy's website is www.newwindenergy.com/

United States Policy on Climate Change

"Greenhouse gases are accumulating in the Earth's atmosphere as a result of human activities, causing global mean surface air temperatures and subsurface ocean temperatures to rise."

The June 2002 Bush Administration and EPA Global Warming Report

The Economics of Small Commercial Ice Machines

Perhaps your congregation is having more, large social gatherings and is considering the purchase of a machine that makes ice. We have seen a few of these and recently measured the electricity used by two self-contained units – ones with built-in storage bins. One in New Jersey uses about 5,500 kilowatt hours (kWh) of electricity per year. The other in Maryland uses about 3,700 kWh per year. Our measurements were taken when the machines had not been recently used for gatherings. Commercial ice machines cost at least $1,100.

As of this newsletter's deadline, a 8.8 cubic foot chest freezer from Sears costs about $270 or about one quarter the cost of a small ice machine, and uses about 300 kWh per year or about one-fifteenth the average electricity used by the two ice machines we measured. Five pound bags of ice currently cost less than $2 each. By using a chest freezer instead of an ice machine, your congregation could purchase between 200 and three hundred bags of ice per

year just on electricity savings alone. For more energy and ice information, see www.eere.energy.gov/femp/technologies/eep_ice_makers.cfm ICE

Church candles, incense may damage lungs

On Friday, November 19, 2004 the *European Respiratory Journal* published a study on the air quality in a small chapel and local basilica. After burning candles for nine hours and burning the amount of incense used during a normal worship service, University of Maastricht researcher Theo de Kok and colleagues measured the levels of fine particulates in the air.

Fine particulate matter is solid particles with a diameter of 10 microns or less and are so small that they can reach very deep into the lungs can cause cancer, heart disease and other problems. The research team was surprised to find that the air in the two buildings had between 600 to 1,000 microgrammes of fine particulates per cubic meter, which is 20 times the European Union (EU) limits for average concentrations of indoor air, as measured over 24 hours.

"We also found very high concentrations of polycyclic aromatic hydrocarbons, well known to be carcinogenic, as well as various types of free radicals, including some previously undocumented ones," said De Kok. Free radicals are blamed for lung tissue damage and a range of inflammatory reactions, such as asthma and chronic bronchitis.

The article implies "that priests and churchworkers - and even devout worshippers who spend several hours each day in church - face the risk of respiratory damage." ICE

Washington DC Energy Office Offers New Booklet

The Washington DC Energy Office has published a 72-page Green Faith Guide available on the web at **http://dcenergy.org/Green%20Faith%20Guide.pdf**. The guide has sections on new building design, kitchen energy use, landscaping and many others. ICE

A very bright idea

After hosting an energy management workshop, the Lord of Life Lutheran Church in New Jersey decided to replace many of their incandescent lamps with compact fluorescent ones. The savings ranged from 13 to 100 watts per lamp. Here, Fred Wilfried holds up one of the compact fluorescent lamps in front of the ones he replaced. ICE

New Jersey Congregations Install Solar Electric Systems

Solar electric panels should generate about 55% of the electricity used by Unity Church of Sussex, NJ.

About 50% of the electricity use by Christ Episcopal Church in Teaneck, NJ could come from the sun.

Holy Trinity Lutheran Church in Magnolia, NJ could have about 85% of its electricity from these panels. ICE

INTERFAITH COALITION ON ENERGY

There are a number of reasons to give money to us:

- You may have extra money lying around, and you don't know what to do with it.
- Perhaps you want to support an energy conservation organization that solely represents the interests of people of faith.
- Maybe you like ICE; maybe one of our articles or a phone conversation saved your congregation money.
- Your contribution is tax-deductible.

Whatever your reasons, please send ICE a check so that we may continue to serve.

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Thanks. ICE