SANCTUARY/WORSHIP SPACE

For spiritual and personal reasons, the sanctuary space is very important to congregational members. With this in mind, a sanctuary space is typically designed to provide a tranquil environment for worshipers and their families. And, an important part of creating this environment of "comfort and aesthetics" is through the optimal use of energy.

Congregational buildings have unique needs because their energy-use patterns are often very different from other buildings. Residential and/or commercial buildings require relatively constant energy but congregation energy use tends to peak on weekends and lessen during the rest of the week with occasional spikes for special meetings and other functions. A large portion of a congregation's energy costs goes toward keeping the facility comfortable during the days when the facility is being used. This includes lighting, heating/cooling rooms and controlling humidity levels. Most congregations use the entirety of their facilities only a few days a week, so a congregation that understands this nuance will be better equipped to design or upgrade their facility to reach optimal energy efficiency.

SANCTUARY SPACE – A CLOSER LOOK AT OPPORTUNITIES

Simple Strategies

- Consider installing carpets and cushions (on pews) to provide comfort and warmth on those cold, wintry days.
- Schedule special events (such as choir practice, arranging flowers/decorations) and cleaning duties on the days just prior and after major services, so that the building is warmed/cooled on consecutive days.
- Take advantage of natural light. Windows, Sun Tubes and/or skylights will allow sunlight to fill the sanctuary/worship space with natural light and reduce the need for artificial lighting.
- Many facilities have a direct entrance to the sanctuary/worship space from outside. Properly sealed doors can prevent heat loss. If, due to aesthetics or history, it is not practical to install modern, energy-efficient doors, use weatherstripping to seal the doors against drafts and energy loss. Weatherstripping and caulking are two effective techniques that seal up areas in your building where air may be leaking.
  - Weatherstripping is done around movable structures such as windows and doors.
  - Caulking is done in stable, non-moving areas such as cracks in the wall, around electrical openings, where the floor meets the wall, etc.
- Many sanctuary/worship spaces have high ceilings, which can make creating a more comfortable environment more difficult. In the winter, the warm air from your heating system will rise. This causes your system to work harder to keep the lower areas at a comfortable temperature. Proper air circulation can reduce energy use by drawing the warmer air from the ceiling and pushing it back to the floor. Ceiling fans can be a good way to accomplish this goal. Ceiling fans can actually help with both cooling and heating. By keeping the air circulating, they can help prevent hot and cold spots as well as keeping the air fresh.

- Installing controls for heating and cooling is a key to reducing energy waste. Replacing existing thermostats with programmable thermostats will allow for a more comfortable environment and reduce energy use. New

network thermostats allow for even better "zone" control and energy savings. See the Heating, Cooling & Ventilating section of this Guide for more information.

- **Concerns about night set back and its effect on the pipe organ?** The Associated Pipe Organ Builders of America say that temperatures as low as 45 degrees F will not cause damage to the organ. So normal setback ranges ~ 55F to 60F should not be an issue.

Larger Opportunities

- Think about demand-controlled ventilation (DCV) -congregations have constant swings in occupancy and can save energy by decreasing the amount of outdoor ventilation supplied by the HVAC system during low-occupancy hours. A DCV system senses the level of carbon dioxide (CO_2) in the return air stream and provides ventilation accordingly.
- For new facilities, consider taking advantage of advancements in stain glass window technology. Today low-E insulated glass and thermally improved frames are available for many stained glass applications.
  - For existing windows, consider installing clear glass/plastic storm windows outside the stained glass to add an extra layer of protection against energy loss. However, without proper ventilation, this technique may cause damage by trapping moisture and damaging the lead. Talk with a window professional to see if this is a concern at your congregation.

Did You Know?

Energy savings can be optimized (especially cost effective in new facilities) when congregations utilize energy management systems that control when and where lighting, heating/cooling and fresh air go to various parts of the facility.

Sanctuary Lighting

Lighting plays a critical role in defining the look and feel associated with the tranquil environments of a sanctuary. Lighting is not only necessary for viewing and reading but it also provides architectural accents and a feeling of warmth throughout the space. Traditionally these lighting needs were met with incandescent lamps because of their low first cost, warm color and dimming capabilities. Today, new energy-efficient CFL's provide similar quality to incandescents (offering warmer colors with dimming technology) at affordable prices. Consider CFL's for your recessed cans, pendant fixtures, and accent and spot lighting applications. We recommend consulting a lighting professional to ensure that your lighting system meets both the energy-efficient and aesthetic needs of your congregation.

Project Suggestion

There may be unique ways to adapt energy-efficient technologies for use in your congregational facility. For instance, a synagogue in Bethesda, Maryland converted the Eternal Light (Ner Tamid) to solar power and connected it directly to a photovoltaic cell on the roof.

- Lighting Controls -With effective controls, lighting can be used more efficiently. Many sanctuary spaces have limited options in the use of their lighting system. Better controls will allow more flexibility, create a more comfortable environment for your members, and reduce energy waste by allowing the use of ONLY those lights that are needed. Consider the following control techniques:
  - Bi-Level switching
  - Daylight Dimmers/Photo cells
  - Occupancy sensors

See the "Lighting" section of this Guide for more information.