

# Introduction

Energy audits of religious buildings show that approximately 80 percent of the energy used in a place of worship is for heating and ventilation. As people concerned with the operations of religious buildings, you can take advantage of that finding to reduce your operating costs by making sure your heating and ventilating equipment is working as efficiently as possible, and by reducing heat loss from your facilities.

The four most cost-effective approaches to reducing heat loss are as basic as they are effective:

- weather-stripping and caulking around windows,
- weather-stripping around doors,
- insulating accessible attics and uninsulated, unfinished walls, and
- installing setback thermostats that automatically reduce heating and cooling when areas are unoccupied.

The first part of the Practical Guide, Simple Steps to Reducing Energy Use, discusses a range of low or no-cost energy reduction measures that can reduce your energy bills while adding comfort and attractiveness to your facility.

The second section, Building Systems and Maintenance, provides more detail. Roofs, walls, cladding, and other parts of the building envelope are described, explaining where to seal, how much insulation is enough, and the importance of vapour barriers.

A section on Heating Systems describes electric and natural gas furnaces, steam boilers and hot water boilers, and other systems typical of religious buildings. It includes technical details and checklists to help provide an understanding of the operation of these systems and a basis for ensuring their proper maintenance for maximum efficiency. A well-maintained heating system saves energy, greenhouse gas emissions, and money.

Ground Source heat pumps are described, since they are receiving considerable attention as one of the most comfortable, energy efficient, and environmentally friendly heating and cooling systems available.

Given the high initial cost of ground source heat pumps, and potential difficulties associated with installing the required underground piping in confined urban or rocky locations, you are cautioned that ground source heat pumps may not be economically feasible even when they could replace an existing heating system that has reached the end of its useful life. And since solar energy, the ultimate sustainable fuel, is becoming more and more cost-effective as the technology progresses, descriptions of solar heating through windows, solar 'walls', and rooftop panels are given. These can augment your current systems for space and water heating.

Air conditioning and Ventilation are also covered here.

The Lighting section covers energy efficient lighting that can add to the attractiveness of your facility and reap energy savings, particularly in cases where you keep the lights on for long periods of time.

Subsequent sections of this guide focus on water conservation and the purchasing of energy-efficient goods and equipment.

Finally, the section on Energy Audits explains the types of audits and how to get started with them. Various auditing templates are provided as appendices.