

# Energy Conservation in Housing for the Homeless

A Guide for Providers

*Prepared for*

The DOE-HUD Initiative  
U.S. Department of Energy  
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The DOE-HUD Initiative on Energy Efficiency for Housing was created in 1990 as a collaborative framework to harness the technical skills of the Department of Energy's (DOE's) laboratories and programs for making energy efficiency improvements in federally aided housing. This multiyear initiative supports both DOE's National Energy Strategy and the Department of Housing and Urban Development's (HUD's) mission to make low- and moderate-income housing more affordable.

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Blake Chambliss, FAIA, Chairman and Founder of the American Institute of Architects Search for Shelter Program, served as a technical advisor for this guide. He played an indispensable role from the guide's inception to its completion.

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## **Preface**

"Energy Conservation in Housing for the Homeless" focuses on one aspect of HUD's mission to end the tragedy of homelessness. Increasing the energy efficiency of homeless facilities will enable managers to devote more funds to basic operations. Given the tragic condition of homeless individuals in America, there are two reasons, both pragmatic and rational, why housing operators should be concerned about energy savings:

1. Buildings that house homeless persons typically have an average remaining useful life of 30-40 years. The lifetime costs of operating these buildings have a significant impact on the providers' ability to help the homeless. It makes good business sense to make the facilities as cost effective as possible, and energy-efficient design and construction help make this possible.
2. Experience shows that any program developed to "end the tragedy" of homelessness must provide for the needs of homeless persons beyond their basic need for shelter. Investing in their dignity is not a luxury. Nor should issues of personal privacy and comfort in safe, sanitary, and decent housing be considered extravagances. Energy efficiency, properly achieved, means greater individual comfort and health.

Thoughtfully planned and constructed buildings enhance the self-esteem of residents and contribute to their acceptance by their neighbors. The design of these buildings can both raise the spirits of the occupants and enrich their quality of community, thus enhancing the dignity of all. Ensuring the energy efficiency and cost effectiveness of these buildings contributes to these aims.

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## Introduction

# Decrease Energy Bills, Increase Efficiency and Comfort

**A**s a homeless housing provider, you must face a variety of demands with limited resources. Coping with escalating operating costs is a constant challenge. Have you considered how much money you could save by reducing your energy bills? Rather than considering high energy bills a fixed necessity, you can make a significant dent in them by improving the overall energy efficiency of your building.

Using energy more efficiently can shave one-third or more off your annual energy

bill. The energy dollars you save can be rechanneled toward providing basic needs for your residents such as food, clothing, bedding, and medicine.

Many people think that they have to sacrifice comfort to save energy. But reducing *wasted* energy does not result in uncomfortable conditions. Improved energy efficiency can, in fact, reduce energy bills *and* increase the quality of the living environment.

### The Guide at a Glance

- Section I outlines a four-step strategy for approaching energy efficiency in your renovation project.
- Section II offers suggestions on what to look for when buying a building to renovate and energy-efficient design options.
- Section III discusses energy-saving measures for your building.
- Section IV addresses operation and maintenance issues, including information about utility rate structure.
- Section V provides resources for further information.

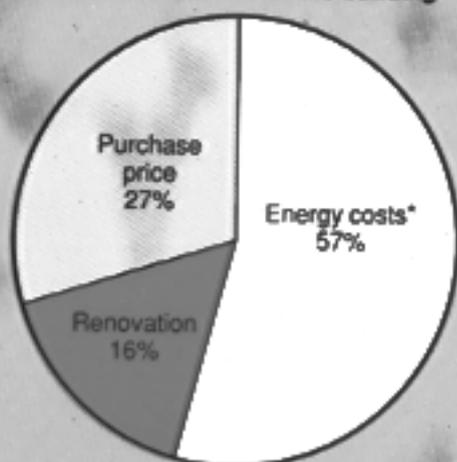
## Considering Costs: Capital Versus Operating

Nothing brings home the value of energy efficiency like a close look at a building's capital and operating costs. During the lifetime of a building, the operating costs are substantially greater than its initial capital costs. The measures you take to improve a building's energy efficiency during renovation, therefore, can pay for themselves out of energy savings over the building's life and reduce your energy bills.

As an example, this figure compares the initial outlay of funds for a building's purchase and renovation to its energy costs over a 25-year lifetime. The example building is an approximately 50,000-square-foot, 86-unit apartment complex being renovated as transitional housing.

Energy costs for this building in 1991 dollars are about \$34,000 per year. The

Costs over the life of the building



\*Based on a 2% fuel escalation rate and 8% discount rate over a 25-year life.

building purchase and renovation costs are a one-time cost, whereas energy costs are an ongoing expense throughout the building's life. Energy costs will total more than the initial purchase and renovation costs over 25 years.

## Renovate with Energy in Mind

This guide is for homeless housing providers who are renovating an existing building using federal funds. Under the McKinney Homeless Assistance Act, certain HUD programs can support the costs of rehabilitation, construction, and conversion of facilities to assist homeless people. Although written specifically for McKinney fund recipients, this guide contains useful information for all providers

interested in cutting back energy use in their buildings.

The term "homeless housing" and "homeless facility" apply to a wide range of building types, from single-family homes to institutional shelters exceeding 50,000 square feet. The emphasis in this guide reflects the trend toward smaller, more personalized housing for the homeless. Much of the information provided here relates to large group homes, transitional homes, or small shelters of less than 10,000 square feet, many of which are not

easily classified as traditional building forms.

This guide can help you to reap the benefits of lower utility bills over the lifetime of the building. Experience shows that you get the highest return for the least effort if you begin the renovation of your building with energy in mind. Grant or low-interest funding allows you to defray capital costs for energy-efficient measures up front, which saves considerable dollars in the long run.

Energy-saving measures run the financial gamut from no- and low-cost to more costly ventures. Most of the measures recommended in this guidebook are based on a payback period of 10 years or less. This means that energy improvements will pay for themselves, because of energy cost savings within that time, resulting in a net savings on the building operation after the payback period.