ABSTRACT

The author has led a Task Group on development of a Standard Guide for Residential Green Buildings through the consensus process of the American Society for Testing and Materials (ASTM). The voluntary guidance document has been processed through two public peer reviews in ASTM’s E-50.06 sub-committee on the environment. During early 1997 the final-draft document will be issued for Society ballot.

The guide’s purpose is to present general criteria for home builders, residential designers and developers on how to systematically approach the creation of a “green” home — from the design phase on through to eventual de-commissioning of residential structures.

This paper briefly reviews the standards process, includes an overview of the Standard Guide’s principal criteria, and provides a robust resource listing for further investigation by readers.

During development of the Standard Guide, authors emphasized thorough review of the available literature on sustainable residential development. This was then reflected in the technical contents of the Standard Guide to provide criteria useful to builders to:

- provide a standardized framework for evaluating whether homes (new or remodeled) meet minimum consensus guidelines on resource efficiency;
- reduce environmental impact of new-home developments and major remodeling projects;
- improve long term sustainability of the nation’s new and existing housing; and
- help to effectively recognize and promote the benefits of efficiency and renewable energy.

1. INTRODUCTION

The guiding principals provided in the Standard Guide include systematic consideration of the following goals:

Goal 1: Use the four “R’s” via effective design, construction and commissioning including:

A. reduction of materials, resources, embodied energy utilized in construction or rehab;
B. reuse of materials where practical and structurally sound;
C. recycle — elevated levels of recycled materials and emphasized design for recyclability of structure;
D. and, renewable energy and renewable materials (where not in conflict with a, b, and c) and without compromising structural durability, indoor and pollutant levels, ventilation, causing major zoning violations, code deficiencies, or marketability of the building produced.

Goal 2: Emphasize energy and resource efficient design, specification and construction techniques:

A. envelope thermal and air leakage protection package (meets or exceeds CABO-MEC 1995 or ASHRAE 90.2-1993)
B. positive ventilation provided, occupant controllable (overall exchange: 0.35 to 0.5 ACH)
C. minimal length, well sealed ducts (tested), located inside the conditioned spaces
D. highly efficient H & A/C (“right” sizing, high unitary efficiency, effective controls, system is commissioned prior to occupancy);
E. efficient service water heating fuel consumption (considering solar water heating);
F. measures taken to minimize potable water use;
G. major appliances selected having DOE “Energy-guide” labeled usage in lower quartile (25%) of appliance “family” annual energy cost;
5. ACKNOWLEDGEMENTS

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Also, the Alliance to Save Energy and the National Association of Home Builders deserve thanks for hosting the initial meetings of the Standard Guide preparation effort.

6. BIBLIOGRAPHY FOR STANDARD GUIDE

Since the text of the actual Standard Guide:

STANDARD GUIDE FOR DESIGN, SPECIFICATION, CONSTRUCTION AND OPERATION OF RESIDENTIAL GREEN BUILDINGS,

can not be provided here due to length and copyright restrictions, and this paper was developed to present an overview of the Guide, the process of its development and resources used, this section provides a listing of key resources used in preparing the document for review in the ASTM consensus process.

The Standard Guide itself is copyrighted by the ASTM and the current draft and (final document) is available from that organization.

6.1 Books and Manuals


6.2 Articles


6.3 Reports and Papers


*Clearing the Air: The Real Story About Indoor Air Quality.* 1986. Honeywell, Inc.


*Indoor Air Quality and Your Health.* Augusta, ME. Office of Energy Resources.


Howard, B. D. *Simplified Pollution Avoidance Calculation for Builders Taking Credit For Green Buildings.* Energy Efficient Building Association, Minneapolis, MN USA.


6.4 U.S. Environmental Protection Agency


