STANDARD

ANSI/ASHRAE Standard 105-2014

Standard Methods of Determining, Expressing, and Comparing Building Energy Performance and Greenhouse Gas Emissions

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Includes Web-based access to building and site energy-use forms. (Requires Microsoft Word®.)

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SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of ASHRAE. *Consensus* is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Manager of Standards of ASHRAE should be contacted for:

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard, or
d. permission to reprint portions of the Standard.

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NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

This edition of ASHRAE Standard 105 provides a method of energy performance determination, expression, and comparison in mandatory language that can be applied to any building. It is intended to provide a common basis for reporting building energy use in terms of delivered energy forms and expressions of energy performance, for comparing design options, and for comparing energy performance in terms of energy resources used and greenhouse gas emissions created, both across buildings and for energy efficiency measures within buildings.

The standard provides a great deal of flexibility for adopting agencies and authorities. The basis for all energy measurements is the annual energy flow across the building and site boundaries. This edition of the standard supplements site energy measurements with methods of determining primary energy and greenhouse gas emissions at the option of the adopting authority. Primary energy and greenhouse gas equivalence conversion factors have been left to the discretion of the adopting authority. The committee has included an informative appendix with multipliers that may be chosen by the adopting authority if desired.

This standard is accompanied by supplemental files that include the forms shown in Normative Appendices A, B, C, D, E, and F, which can be located online at www.ashrae.org/105-2014forms.

1. PURPOSE

This standard is intended to foster a commonality in determining and reporting the energy performance of buildings to facilitate a comparison of design strategies or operation improvements in buildings as well as the development of building energy performance standards and reporting of greenhouse gas emissions associated with building operation. It provides a consistent method of determining, expressing, and comparing the energy performance of new and existing buildings and greenhouse gas emissions associated with the design of new buildings and operation of existing buildings.

2. SCOPE

2.1 This standard covers

a. new buildings and existing buildings or portions thereof;
b. the determination and expression of building energy performance and the estimate of greenhouse gas emissions associated with that energy use; and
c. techniques for the comparison of the energy performance and associated greenhouse gas emissions between different buildings, alternative designs for the same new building, or for improvements in the operation of existing buildings.

2.2 This standard does not

a. establish building energy performance or greenhouse gas emissions goals or limits;
b. present a method for certification of prediction methodology, such as computer programs;
c. address embodied energy of building materials and systems; or
d. incorporate transportation energy or associated greenhouse gas emissions for building functions, including commuting, business travel, and process transportation.

3. DEFINITIONS

adopting authority: the agency or agent that adopts this standard.

avoided energy: energy not consumed through the use of energy efficiency measures based on the last units of energy subtracted from a system.

avoided greenhouse gas emissions: greenhouse gas not emitted through the use of energy efficiency measures based on the last units of energy subtracted from a system.

building: a structure wholly or partially enclosed within exterior walls, or within exterior and party walls, and a roof, affording shelter to persons, animals, or property.

building energy: energy consumed by a building as measured at the boundaries of the building (E_{bld}).

building energy performance: a measure of how a building performs with respect to energy consumption divided by a normalization parameter (e.g., kBtu/ft^2·yr) in terms of delivered energy forms to the building or building site or in terms of the resources consumed to generate, transmit, and deliver those energy forms to the building site.

building site: a building, or group of buildings, and site that utilize a single submittal for a construction permit or that are within the boundary of contiguous properties under single ownership or effective control.

comparison framework: a set of data and a methodology that serve as the basis of comparison for a building or building site with respect to energy performance or greenhouse gas emissions.

conditioned: provided with a heat supply capable of maintaining an air temperature of 50°F (10°C) or higher inside a building space, or provided with a cooling supply capable of maintaining an air temperature of 86°F (30°C) or lower inside a building space.

energy: the capacity for doing work. Energy takes a number of forms that may be transformed from one into another, such as thermal (heat), mechanical (work), electrical, or chemical. Customary measurement units are British thermal units (Btu), Joules or kilowatt-hours (kWh).