

Standard 90.2-2018



ANSI/ASHRAE/IES 90.2-2018, *Energy-Efficient Design of Low-Rise Residential Buildings*

Purpose

To establish minimum whole-building energy performance requirements for energy efficient residential buildings.

Significance

The 2018 version of Standard 90.2 is a leadership standard that can be adopted as a stretch code, which presents a cost-effective approach to deliver residential building energy performance that is at least 50% more efficient than the energy efficiency defined by the 2006 IECC and 20% more efficient than the 2021 IECC. Key to accomplishing this objective is delivery of an accurate, flexible, performance-based tool to enable user creativity in meeting performance objectives. This feature can allow users to comply at substantially lower cost compared to prescriptive standards. The standard incorporates detailed verification requirements, thus ensuring that the intended energy performance results are achieved. In addition, Standard 90.2 delivers improved resilience, safety, reduced greenhouse gas emissions, and improvements to indoor air quality and health benefits. These additional benefits are provided because Standard 90.2 allows for renewable resources and requires compliance with ASHRAE Standard 62.2, *Ventilation and Acceptable Indoor Air Quality in Residential Buildings*.

Scope

Provides minimum design, construction, and verification requirements for both new residential buildings and new portions of existing residential buildings and for their systems that use both renewable and nonrenewable forms of energy.

Highlights

- ✓ The standard provides a required mechanism to evaluate any residential building design against the standard's performance objectives.
- ✓ Designers and home builders can easily assess various designs, materials options, orientations, and other variables to evaluate predicted energy performance.
- ✓ Utilities and beyond-code program developers have a reliable and repeatable tool for helping to establish program targets and ensure program compliance.
- ✓ This standard is under continuous maintenance by ASHRAE and the next version will cover all residential buildings and will also address carbon, and likely include jurisdictional options to reach zero carbon and zero energy.
- ✓ While this standard focuses on performance as the primary objective, it also includes some system-level minimum prescriptive provisions. These prescriptive provisions are provided to enable compliance where the required features are incapable of being modeled and to protect against analytical gaming.
- ✓ The standard contains an informative appendix which describes how to produce prescriptive paths. This approach allows for any number of prescriptive paths to be produced and encourages innovation in energy efficient building technology.
- ✓ Cost effectiveness was a critical consideration during the standard's development.

Changes and Improvements from Standard 90.2-2007

- ✓ 90.2-2018 requires greatly increased levels of energy efficiency.
- ✓ Includes a revised scope that covers manufactured housing.
- ✓ Recognizes the important role of on-site renewable energy generation to help reach building performance targets according to the specified Energy Rating Index (ERI) for the applicable climate zone.
- ✓ Provides a clear rule set to support accurate energy modeling with considerations for building size, envelope and lighting.
- ✓ Clarifies guidance on building envelopes – prioritizes certified performance of insulation, fenestration (e.g., window/door arrangements), and envelope air sealing; makes mandatory the field testing and verification of envelope air leakage; adjusts building modeling techniques to address energy use implications of building size.
- ✓ Includes revised modeling rules for quantifying residential lighting; expanded credits for lighting control devices; and revised lighting allowances. Emphasizes the use of energy-saving strategies for HVAC and water heating systems to achieve building performance objectives, with a focus on proper ductwork and plumbing design.