

# Standard 90.1-2022



## ANSI/ASHRAE/IES 90.1, Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

### Purpose

Provides minimum requirements for the energy-efficient design of sites and buildings except low-rise residential buildings. This standard is the basis for commercial and mid- to high-rise residential energy codes and is referenced in the U.S. Energy Conservation and Production Act, which requires states to plan for the timely adoption of a commercial building code that meets or exceeds the latest DOE-approved version of 90.1.

### Significance

- Every edition of the standard is evaluated on both energy savings and cost effectiveness to encourage adoption by jurisdictions around the world.
- Offers both prescriptive and performance-based pathways.
- Alabama, Indiana, New Jersey, Oregon, West Virginia, New York, and Washington, D.C have adopted Standard 90.1 directly.
- The two performance pathway options (Section 12 and Appendix G) provide flexibility to trade off less efficient design elements with other selections that exceed minimum prescriptive requirements. Both performance pathways require energy modeling to demonstrate that the proposed design exceeds the baseline, reference building design.
- Appendix G allows makes it possible for a project to show compliance with jurisdictional energy code requirements while qualifying for above-code programs like LEED v4.

### Scope

Standard 90.1 sets minimum energy efficiency requirements for the design and construction of new systems and equipment in buildings and building sites, as well as plans for operation and maintenance. The standard addresses the building envelope; heating, ventilating, and air conditioning; service water heating; power distribution; and lighting.

### Highlights

- ✓ The 2022 version of 90.1 begins the Standard's move toward becoming a Net Zero Carbon Emission Code by 2031. To that end, a new optional appendix is provided for users to evaluate Appendix G compliance using alternative metrics like site energy, source energy, or carbon emissions.
- ✓ The standard includes a new mandatory section, Chapter 11, Additional Efficiency Requirements, which has 33 energy-efficient measures from which a designer can choose to satisfy the total required "Energy Credits" for a given building type and climate zone.
- ✓ A new mechanical section offers an alternative to prescriptive, component-based compliance. The new total system performance approach evaluates how efficiently the HVAC system performs overall.

## Changes and Improvements from Standard 90.1-2019:

- ✓ The 2022 edition is the first *minimum-efficiency U.S. model energy standard or code* with an expanded scope that includes not just buildings, but the entire building site, including renewable energy located on-site.
- ✓ The 2022 edition is estimated to reduce energy costs by over 15% compared to the 2019 version, and over 48% compared to the 2004 version. Many of the methods used to obtain these savings can also be applied to the edition of the code currently used by your jurisdiction to expand its energy savings.
- ✓ The latest standard provides new guidance for mitigating thermal bridges in the building envelope and expanded air leakage testing requirements.
- ✓ A variety of changes were made to the lighting power allowances and control system requirements to reflect current best practices and developments in technology. A new section was added to address horticultural lighting.