

II. Scope and Application Guide

About Materials

This *COMcheck-EZ* based manual is an optional method to demonstrate compliance with energy codes for commercial and high-rise residential buildings. It is applicable to most commercial buildings and high-rise residential buildings four stories or more above grade. You can use this manual to demonstrate that your commercial or high-rise residential building design complies with the *2002 Energy Conservation Construction Code of New York State*.

Residential buildings, townhouses, and apartments with three stories or fewer are covered under the Residential Compliance Guides. *MECcheck software*, a companion product to *COMcheck-EZ*, is available to demonstrate compliance for low-rise residential buildings.

These materials simplify and clarify energy code requirements. Although they have a somewhat different format than the Code itself, the requirements presented in this guide generally match those found in Chapter 8 of the Code and comply with requirements.

The Compliance Guides represent one of four commercial compliance paths provided for in the *2002 Energy Conservation Construction Code of New York State*. The four compliance paths include Chapter 7: ASHRAE Standard 90.1-1999, Chapter 8: Design By Acceptable Practice, *COMcheck-EZ* Software referred to in section 101.3.1 and this Manual worksheet approach (which is based on the *COMcheck-EZ* and Chapter 8 of the Code).

This Scope and Application guide gives building design professionals and code officials an overview of the manual and explains how the energy code requirements apply to a variety of commercial building situations.

You can access a U.S. Department of Energy Building Standards and Guidelines Program (BSGP) web site at <http://www.energycodes.gov> to download the *COMcheck-EZ* Software. You may download this manual at the NYS Department of State web site at <http://www.dos.state.ny.us/code/energycode/nyenergycode.htm>. If you have questions about the generic *COMcheck* materials, call the BSGP hot line at 1-800-270-CODE. If you have specific New York questions about the *these*

Guides and the New York COMcheck-EZ materials you may call the New York State Department Of State Codes Division at 1-518-474-4073.

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***NY COMcheck-EZ*TM Based Materials**

The *COMcheck-EZ* based materials include:

- Scope and Application Guide
- Envelope Compliance Guide
- Mechanical Compliance Guide
 - Simple HVAC Systems
 - Complex HVAC Systems
 - Service Water Heating Systems
- Lighting and Power Compliance Guide
- Compliance Documentation Guide
- Software Compliance Guide

The *Envelope, Mechanical, and Lighting Compliance Guides* contain energy efficiency requirements. They provide direction in completing each compliance certificate used to demonstrate code compliance. These guides limit you to a prescriptive compliance path with no performance tradeoffs.

When performance tradeoffs and greater design flexibility are desired for one or more systems (envelope, mechanical, or lighting), the *COMcheck-EZ* software

provides a performance path alternative for each system and generates a report used to demonstrate compliance.

Blank compliance certificates are included at the end of each Guide.

Envelope Compliance Guide

The *Envelope Compliance Guide* contains energy efficiency requirements related to the building envelope. General requirements are included for limiting air leakage, certifying components, and installing vapor retarders. Insulation and window requirements are provided in envelope tables for New York at the end of the *Envelope Compliance Guide*.

Mechanical Compliance Guide

The *Mechanical Compliance Guide* contains energy efficiency requirements for heating, cooling, ventilating, and water heating. Included are requirements for heating and cooling system controls, outdoor-air ventilation, duct construction, and service water-heating systems.

Lighting and Power Compliance Guide

The *Lighting and Power Compliance Guide* contains basic energy efficiency requirements for lighting systems. This guide identifies control, switching, and wiring requirements and types of exterior-lighting sources that comply. It also shows you how to demonstrate compliance with building- or area-specific interior-lighting power limits.

Compliance Documentation Guide

The Compliance Documentation Guide outlines all of requirements for documenting compliance. This guide provides sample project narratives, forms and certificates. It also describes the process of when to fill out each type of documentation, where to submit it and where to find additional help and resources.

Software Compliance Guide

New York has worked with the U.S. Department of Energy and Pacific Northwest National Laboratories to amend the generic *COMcheck-EZ* software to include state-specific amendments that are referenced in this guide. Downloads are available at www.energycodes.gov. The *Software Compliance Guide* will provide instructions on obtaining, installing, and using the *COMcheck-EZ* software. The software is a highly flexible way to demonstrate compliance with minimal input. The software is designed to run on most Windows-based computers. The envelope portion allows roof, wall, window, floor, and skylight performance tradeoffs. The lighting portion allows you to quickly determine if your lighting design meets the interior-lighting power limits. The mechanical portion displays and prints a checklist of mechanical requirements based on descriptions of the HVAC systems and water-heating systems used in the building. The software automatically generates a report that can be affixed to project plans and submitted to code enforcement personnel to demonstrate compliance.

Scope

You can use *COMcheck-EZ* to demonstrate energy code compliance in the design and construction of most types of commercial and high-rise residential buildings. However, for buildings having a window-wall ratio (WWR) of more than 50%, you must either use the *COMcheck-EZ* software method to demonstrate envelope compliance or an alternative compliance path such as ASHRAE 90.1 1999.

Applicable building types include, but are not limited to

- offices
- retail, grocery, and wholesale stores
- restaurants
- assembly and conference areas
- industrial work buildings
- commercial or industrial warehouses
- schools and churches
- theaters
- apartment buildings and condominiums with four or more habitable stories
- hotels and motels

Except for electric lighting and service water heating systems, requirements do not apply to

- very low energy use buildings (i.e., peak energy usage less than 3.4 Btu per hour per square foot or 1 watt per square foot of floor area)
- buildings or portions of buildings that are neither heated nor cooled
- buildings designated as historic
- Nonresidential Farm Buildings including barns, sheds, poultry houses and other buildings and equipment on the premises used directly and solely for agricultural purposes
- Renewable energy usage buildings where building design energy usage for heating and/or cooling can be demonstrated to be completely supplied from renewable sources
- Industrial Process

Applications

The following sections explain how the 2002 Energy Code applies to a variety of typical building situations. While these examples can help illustrate various code applications, reference should be made to Chapter 1 of the code. For conveyance each code section is listed next to the specific topic.

Unconditioned Spaces (§101.4.1)

Unconditioned spaces are exempt from the envelope requirements of the code. To be considered unconditioned, a space must have no heating or cooling system and not be conditioned indirectly by an adjacent space. Generally, if the conductance of heat between a space with no heating or cooling system and adjacent conditioned space is greater than the conductance between it and the outdoors, the space is considered conditioned.

Substantial Alterations to Existing Buildings (§101.4.2.4)

The code shall apply only to the portion of a building subsystem that is replaced, provided that 50 percent or more, measured in units appropriate to that subsystem, of such building subsystem is replaced within any consecutive 12-month period.

Substantial Alterations to existing buildings must comply with the following criteria:

- The replacement of lighting systems must comply with the requirements of the energy code unless less than 50% of the luminaires are replaced in a building and the alterations do not increase the installed interior lighting power.
- Alterations to a building's exterior and exterior window system (fenestration) when more than 50% of the building's window area (sq. ft.) is upgraded. Any additional fenestration added to the building envelope shall comply.

Remember that each altered component 50% or greater (e.g., window, lighting fixture, HVAC units) must comply, and, if the entire building envelope or building lighting system is not being brought into compliance, the alteration cannot result in greater energy use.

Additions (§101.4.2.2)

Additions are any extension or increase to a building or subsystem. (§202)

Envelope, lighting, and mechanical systems and components are treated the same as they are for new buildings. Existing systems whose services are simply extended into an addition do not have to meet current code requirements, although **the code does apply to new components of the system in the addition.**

Treat the addition as a stand-alone building, ignoring the common walls between the existing building and the addition, and show compliance for only the addition. You can use either the compliance guide or the software method to demonstrate compliance using this option.

Tenant improvements in an existing building (the base building has been constructed, but the individual tenant spaces have not been completed) are considered new construction. All envelope, lighting, and mechanical systems and components being installed must comply with the applicable energy code requirements.

Additional components to an existing system must comply with the energy code requirements; unchanged components do not have to comply.

Buildings with Multiple-Occupancy Types (§101.4.2.5)

The energy code addresses buildings with multiple-occupancy types as follows:

- **Minor occupancy**- if an occupancy type takes up less than 10 percent of a building's conditioned floor area, then the area devoted to that occupancy type must meet the same requirements as the major-occupancy type.
- **Multiple and single occupancy** – the same compliance process is used for commercial buildings with multiple-occupancy types as for those with a single-occupancy type. The *COMcheck-EZ* manual and software methods allow you to specify multiple-occupancy types.
- **Mixed Residential and Commercial Occupancy** - This occupancy type occurs when a building has three or fewer stories and contains both residential and commercial occupants, with the minor-occupancy type taking up more than 10 percent of the building's conditioned floor area. The residential and commercial occupancies are considered separately because they fall under two different scopes. Thus, two compliance submittals must be prepared using the appropriate calculations and forms from the respective codes for each type. Mixed residential and commercial buildings having more than three stories must comply as commercial buildings, regardless of the number of stories that are classified as residential occupancy.

Industrial Processes (§101.4)

The energy code does not apply to equipment or portions of building energy systems that use energy primarily to provide for industrial or manufacturing processes.