

ORDINANCE NO. 50, 2008
OF THE COUNCIL OF THE CITY OF FORT COLLINS
AMENDING CHAPTER 5, ARTICLE II, DIVISION 2, OF THE CITY CODE
FOR THE PURPOSE OF ADOPTING THE *2006 INTERNATIONAL
ENERGY CONSERVATION CODE (IECC)*®, WITH AMENDMENTS

WHEREAS, the current energy conservation design and construction code for new and enlarged residential and commercial buildings (exclusive of detached one- and two-family dwellings and multiple single-family dwellings [townhouses] not more than three (3) stories above grade and their associated accessory structures) is based on *ASHRAE/IES 90.1-1989, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings*, promulgated by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. and the Illuminating Engineering Society of North America, as amended and enacted by the City in May 1998; and

WHEREAS, a volunteer code-review task group (represented by code officials from the City of Fort Collins, Poudre Fire Authority, and Larimer County, the professional building and design industries in the Larimer County region, and various other contributors as needed) has completed an extensive review of the *2006 INTERNATIONAL ENERGY CONSERVATION CODE*®, the companion *ICC* mid-triennial update in the form of the *2007 IECC SUPPLEMENT*®, in addition to the proposed local amendments thereto; and

WHEREAS, the Affordable Housing Board, the Air Quality Advisory Board, the Building Review Board, the Electric Board, the Health District of Northern Larimer County Board, the Natural Resources Advisory Board, the Planning and Zoning Board, and the Commission on Disability have made certain recommendations with respect to the adoption of the *2006 INTERNATIONAL ENERGY CONSERVATION CODE*® and proposed amendments; and
WHEREAS, the Council of the City of Fort Collins has determined that it is in the best interest of the health, safety and welfare of the City and its citizens that the *2006 INTERNATIONAL ENERGY CONSERVATION CODE*®, as amended be adopted.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF FORT COLLINS that Chapter 5, Article II, Division 2 of the Code of the City of Fort Collins is hereby amended and revised in the following respects:

Section 1. That Section 5-26 subparagraphs (b) and (c) of the Code of the City of Fort Collins are hereby repealed and reenacted to read as follows:

(b) There is hereby adopted by reference, the latest published version (2007 or subsequent regularly updated edition thereafter, whichever is newer) of *ASHRAE/IESNA 90.1, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings*, promulgated by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. and the Illuminating Engineering Society of North America, as amended by the City. Said standard as amended shall apply exclusively to the design and construction of new buildings and their systems; new portions of existing buildings and their systems; and to new systems and equipment in existing buildings for the purpose of establishing requirements for minimum energy-efficiency, exclusive of detached one- and two-family

dwellings, multiple single-family dwellings (townhouses), and multiple-family buildings not more than three (3) stories above grade.

(c) There is hereby adopted by reference, the *2006 International Energy Conservation Code (IECC)*[®], published by the *International Code Council (ICC)*[®], as amended by the City, which shall apply exclusively to the design and construction of all buildings that are classified as residential buildings not more than three (3) stories above grade and their systems; new portions of such existing buildings and their systems; and to new systems and equipment in such existing buildings, exclusive of detached one- and two-family dwellings, multiple single-family dwellings (townhouses), for the purpose of establishing minimum requirements for minimum energy-efficiency.

Section 2. That Section 5-31 Code of the City of Fort Collins is hereby enacted to read as follows:

Sec. 5-31. Amendments and deletions to code.

The *2006 International Energy Conservation Code (IECC)*[®] adopted herein is hereby amended in the following respects:

(1) *Section 101, SCOPE AND GENERAL REQUIREMENTS*, is amended to read as follows:

“SECTION 101 – SCOPE AND GENERAL REQUIREMENTS

101.1 Title. This code shall be known as the *International Energy Conservation Code* of the City of Fort Collins and shall be cited as such. It is referred to herein as “this code.”

101.2 Scope. This code applies to all buildings, exclusive of those residential and accessory buildings regulated by the *International Residential Code* currently in effect as enacted by the City.

101.3 Intent. This code shall regulate the design and construction of buildings for the effective use of energy. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve the effective use of energy. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

101.4 Applicability. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

101.4.1 Existing buildings. Except as specified in this chapter, this code shall not be used to require the removal, alteration or abandonment of, nor prevent the continued use and maintenance of, an existing building or building system lawfully in existence at the time of adoption of this code.

101.4.2 Historic buildings. Any building or structure that is listed in the State or National Register of Historic Places; designated as a historic property under local or state designation law or survey; certified as a contributing resource with a National Register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the National or State Registers of Historic Places either individually or as a contributing building to a historic district by the State Historic Preservation Officer or the Keeper of the national Register of Historic Places, are exempt from this code.

101.4.3 Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition, comply with this code as a single building.

Exception: The following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall or floor cavity is not exposed.
5. Reroofing for roofs where neither the sheathing nor the insulation are exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
6. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.
7. Alterations that replace less than 50% of the luminaires in a space provided that such alterations do not increase the installed interior lighting power.
8. Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the alteration does not increase the installed interior lighting power.

101.4.4 Change in occupancy or use. Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code. Where the use in a space changes from one use in Table 505.5.2 to another use in Table 505.5.2, the installed lighting wattage shall comply with Section 505.5.

101.4.5 Change in space conditioning. Any nonconditioned space that is altered to become conditioned space shall be required to be brought into full compliance with this code.”

(2) *Section 102.1* is amended by adding, new *Subsection 102.1.4*, to read as follows:

“**102.1.4 Insulation product rating.** The thermal resistance (R-value) of insulation shall be determined in accordance with the U.S. Federal Trade Commission R-value rule (CFR Title 16, Part 460, May 31, 2005) in units of $h \cdot ft^2 \cdot ^\circ F/Btu$ at a mean temperature of 75°F.”

(3) *SECTION 105*, is amended to read as follows:

“SECTION 105 – PERMITS, FEES, AND INSPECTIONS

105.1 General. Procedures related to permits, required inspections, payment of fees, and obtaining required approvals shall be as set forth in, *CHAPTER 1— ADMINISTRATION*, of the *International Building Code* currently in effect as adopted by the city.”

(4) New, *SECTION – 108* and *SECTION – 109*, are added at the end of *CHAPTER 1— ADMINISTRATION*, to read as follows:

“SECTION 108 – APPEALS

108.1 General. Appeals of decisions, determinations, and interpretations of this code shall be made pursuant to applicable provisions as set forth in, *CHAPTER 1— ADMINISTRATION*, of the *International Building Code* currently in effect as adopted by the city.

SECTION 109 – VIOLATION PENALTIES

109.1 General. Persons who commit violations of or fail to comply with the requirements of this code shall be subject to the penalties set forth in, *CHAPTER 1— ADMINISTRATION*, of the *International Building Code* currently in effect as adopted by the city.”

(5) *SECTION 202—GENERAL DEFINITIONS*, is amended in the following respects:

(a) The definition of *CODE OFFICIAL*, is amended to read as follows:

“**CODE OFFICIAL.** Is the executive building-code official or such official’s authorized representative as defined in Section 103.1 of the amended *International Building Code* adopted by the city.”

(b) The following new definitions are inserted such that of all definitions of Section 202 therein are maintained in alphabetical sequence:

“C-FACTOR (THERMAL CONDUCTANCE). The coefficient of heat transmission (surface to surface) through a building component or assembly, equal to the time rate of heat flow per unit area and the unit temperature difference between the warm side and cold side surfaces (Btu/h · ft² · °F) [W/(m² · K)].”

“DAYLIGHT ZONE:

1. Under skylights: The area under skylights whose horizontal dimension, in each direction, is equal to the skylight dimension in that direction plus either the floor to ceiling height or the dimension to a ceiling height opaque partition, or one-half the distance to adjacent skylights or vertical fenestration, whichever is least.
2. Adjacent to vertical fenestration: The area adjacent to vertical fenestration which receives daylight through the fenestration. For purposes of this definition and unless more detailed analysis is provided, the daylight zone depth is assumed to extend into the space a distance of 15 feet or to the nearest ceiling height opaque partition, whichever is less. The daylight zone width is assumed to be the width of the window plus two feet on each side, or the window width plus the distance to an opaque partition, or the window width plus one-half the distance to adjacent skylight or vertical fenestration, whichever is least.”

“DEMAND CONTROL VENTILATION (DCV). A ventilation system capability that provides for the automatic reduction of outdoor air intake below design rates when the actual occupancy of spaces served by the system is less than design occupancy.”

“ENTRANCE DOOR. Fenestration products used for ingress, egress and access in non-residential buildings, including, but not limited to, exterior entrances that utilize latching hardware and automatic closers; and contain over 50% glass specifically designed to withstand heavy use and possibly abuse.”

“F-FACTOR. The perimeter heat loss factor for slab-on-grade floors (Btu/h · ft · °F) [W/(m · K)].”

“HIGH-EFFICACY LUMINAIRE. A lighting fixture that does not contain a medium screw base socket (E24/E26) and whose lamps have a minimum efficacy of:

1. 60 lumens per watt for lamps over 40 watts,
2. 50 lumens per watt for lamps over 15 watts to 40 watts,
3. 40 lumens per watt for lamps 15 watts or less.”

“RESIDENTIAL BUILDING. For this code, is limited to R-2 and R-4 buildings, and to R-3 buildings (excluding those buildings specifically regulated by the *City Residential Building Code*), all of which are three stories or less in height above grade.”

“STOREFRONT. A non-residential system of doors and windows mullied as a composite fenestration structure that has been designed to resist heavy use. Storefront systems include, but are not limited to, exterior fenestration systems that span from the floor level or above to the ceiling of the same story on commercial buildings.”

(6) *CHAPTER 3—CLIMATE ZONES*, is amended to read as follows:

**“CHAPTER 3—CLIMATE ZONES
SECTION 301**

301.1 Exterior and interior local design parameters. The following local design parameters shall be used:

Winter Outdoor, Design Dry-bulb (°F)	= 4
Winter Indoor, Design Dry-bulb (°F)	= 72
Summer, Outdoor Design Dry-bulb (°F)	= 89
Summer, Indoor Design Dry-bulb (°F)	= 75
Summer, Design Wet-bulb (°F)	= 62
Degree days heating	= 6368
Degree days cooling	= 479
{For SI: °C = [(°F)-32]/1.8.}	

(7) *Section 401.3* is amended to read as follows:

“401.3 Certificate. A permanent certificate shall be posted on or in the electrical distribution panel. The certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types and efficiencies of heating, cooling and service water heating equipment. Where an electric furnace, and/or baseboard electric heater is installed in the residence, the certificate shall list electric furnace, or baseboard electric heater as appropriate. An efficiency shall not be listed for room heaters, electric furnaces, or electric base board heaters.”

(8) *Section 402.1.4* is amended to read as follows:

“402.1.4 Total UA alternative. If the total building thermal envelope UA (sum of *U*-factor times assembly area) is less than or equal to the total UA resulting from using the *U*-factors in Table 402.1.3 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table 402.1.1. The UA calculation shall be done using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include the thermal bridging effects of framing materials. The SHGC requirements and the mandatory requirements specified in Section 404.2 shall be met in addition to UA compliance.”

(9) *Section 402.2.8* is amended to read as follows:

“402.2.8 Crawl space walls. As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder. All joints of the vapor retarder shall overlap by 6 inches (153 mm) and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (153 mm) up the stem wall and shall be attached to the stem wall.”

(10) *Section 402.4* is amended to read as follows:

“402.4 Maximum fenestration U-factor and SHGC. (Mandatory). The area weighted maximum fenestration U-factor permitted using trade offs from Section 402.1.4 or Section 404 shall be 0.48 for vertical fenestration.”

(11) *Section 402.4.1* is amended to read as follows:

“402.4.1 Building thermal envelope. The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material:

1. All joints, seams and penetrations.
2. Site-built windows, doors and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Dropped ceilings or chases adjacent to the thermal envelope.
6. Knee walls.
7. Walls and ceilings separating a garage from conditioned spaces.
8. Behind tubs and showers on exterior walls.
9. Common walls between dwelling units.
10. Attic access openings.
11. Other sources of infiltration.”

(12) *Section 402.4.3* is amended to read as follows:

“402.4.3 Recessed lighting. Recessed luminaires installed in the building thermal envelope shall be sealed to limit air-leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psi (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.”

(13) *Section 403.2.1* is amended to read as follows:

403.2.1 Insulation. Supply ducts in attics shall be insulated to a minimum of R-8. All other ducts shall be insulated to a minimum of R-6.

Exception: Ducts or portions thereof located completely inside the building thermal envelope.

(14) New, *Section 403.7* is amended to read as follows:

“403.7 Systems serving multiple dwelling units. Systems serving multiple dwelling units shall comply with Chapter 5 in lieu of Section 403.”

(15) *Section 404.2* is amended to read as follows:

404.2 Mandatory requirements. Compliance with this Section requires that the criteria of Sections 401, 402.2.6, 402.2.7, 402.2.8, 402.4, 402.5, 402.6, and 403 must be met.

(16) *Section 404.4.2* is amended to read as follows:

“404.4.2 Compliance report. Compliance software tools shall generate a report that documents that the proposed design complies in accordance with Section 404.3. The compliance documentation shall include the following information:

1. Address or other identification of the residence;
2. An inspection checklist documenting the building component characteristics of the proposed design as listed in Table 404.5.2(1). The inspection checklist shall show results for both the standard reference design and the proposed design, and shall document all inputs entered by the user necessary to reproduce the results;
3. Name of individual completing the compliance report; and
4. Name and version of the compliance software tool.

Exception: Multiple Orientations. When an otherwise identical building model is offered in multiple orientations, compliance for any orientation shall be permitted by documenting that the building meets the performance requirements in each of the four cardinal (north, east, south and west) orientations.”

(17) *Table 404.5.2(1) — SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS*, is amended in the following respects:

- (a) In the cell located under the column, **STANDARD REFERENCE DESIGN**, and in the Row, **GLAZING**, all three numerical entries for “glazing area” and expressed as either, “18%” or “18% of conditioned floor area”, are amended to read, “15%”.

- (b) In the cell located under the column, **STANDARD REFERENCE DESIGN**, and in the Row, **THERMAL DISTRIBUTION SYSTEMS**, the *Thermal Distribution system efficiency (DSE)* numerical value of “0.80”, is amended to read, “**0.88**”.

(18) **CHAPTER 4** is amended by adding a new section at the end thereof to read as follows:

“SECTION 405 – ELECTRICAL POWER AND LIGHTING SYSTEMS

405.1 Interior lighting power (Prescriptive). Lighting in spaces, exclusive of dwelling units, e.g. common areas, shall be high efficacy luminaires or shall comply with the interior lighting power requirements in Chapter 5.

Exception: Dwelling units.”

(19) **CHAPTER 5 – COMMERCIAL ENERGY EFFICIENCY**, is amended in the following respects:

- (a) *Section 501.1* is amended to read as follows:

“SECTION 501 – GENERAL

501.1 Scope. The requirements contained in this chapter are applicable to commercial buildings, or portions of commercial buildings as defined in this code. As such, commercial buildings shall meet the requirements of the most current published edition of *ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except for Low-Rise Residential Buildings*, unless otherwise specified in this chapter.”

- (b) *Section 501.2* is deleted.

- (c) *Section 502* is amended to read as follows:

“SECTION 502 – BELOW-GRADE WALLS AND SLAB FLOORS

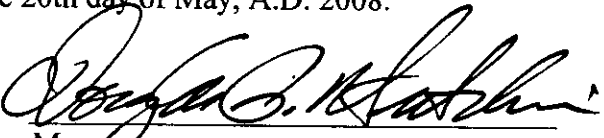
502.2.4 Below-grade walls. The minimum thermal resistance (R-value) of the insulating material installed in, or continuously on, the below-grade walls shall be R-10 and shall extend to a depth of 10 feet (3048 mm) below the outside finish ground level, or to the level of the floor, whichever is less.

502.2 Slabs on grade. The minimum thermal resistance (R-value) of the insulation around the perimeter of unheated or heated slab-on-grade floors shall be continuous insulation with an R-value not less than R-7.5. The insulation shall be placed on the outside of the foundation or on the inside of a foundation wall and shall extend downward from the top of the slab for a minimum distance of 24 inches, or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a combined total of 24 inches.”

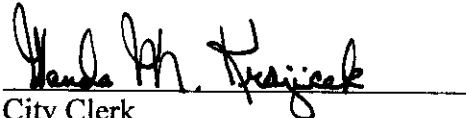
(d) Sections 503, 504, and 506 are hereby deleted.(20) CHAPTER 6 – REFERENCED STANDARDS, is amended by updating all referenced standards under the heading, “ASHRAE”, to refer to the most current published editions thereof.

Section 3. That all of the foregoing changes enacted by this Ordinance shall become effective for implementation commencing July 1, 2008.

Introduced, considered favorably on first reading, and ordered published this 6th day of May, A.D. 2008, and to be presented for final passage on the 20th day of May, A.D. 2008.


Mayor

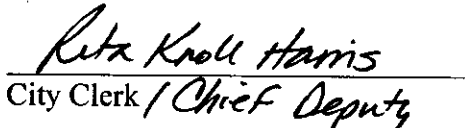
ATTEST:


City Clerk

Passed and adopted on final reading on the 20th day of May, A.D. 2008.


Mayor

ATTEST:


City Clerk / Chief Deputy