

2019 OREGON ZERO ENERGY READY COMMERCIAL CODE

(Chapter 13 of the 2019 Oregon Structural Specialty Code)

PART I COMMERCIAL ENERGY PROVISIONS

The 2019 Oregon Zero Energy Ready Commercial Code, Part I, commercial energy provisions, consists of the following:

- Chapter 1 of the Oregon Structural Specialty Code (OSSC), including specific modifications as shown below.
- ANSI/ASHRAE/IES Standard 90.1 – 2016, including specific modifications as shown below.

SECTION E101 GENERAL

E101.1 Title. These provisions are Chapter 13 of the *Oregon Structural Specialty Code (OSSC)* for commercial energy compliance and shall be referred to herein as “this code.” The OSSC is referred to herein as the “*Building Code*.” Sections E102 through E104 are specific to this code and additional to the requirements of Chapter 1 of the *Building Code*.

SECTION E102 SCOPE AND ADOPTED STANDARDS

E102.1 Scope. This code applies to buildings designed and constructed under the *Building Code*.

Exception: R-2, R-3, and R-4 occupancies, three stories and fewer above finished grade, shall comply with the multi-family energy provisions in Part II of this code.

E102.2 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.

E102.3 Adopted standards.

E102.3.1 Administration and enforcement. This code is administered and enforced under the provisions and authority granted in Chapter 1 of the *Building Code* with the energy efficiency specific Sections E101 through E104 of this code.

E102.3.2 Construction provisions. ANSI/ASHRAE/IES Standard 90.1-2016 shall serve as the construction provisions for this code. ANSI/ASHRAE/IES Standard 90.1-2016 shall be referred to herein as “Standard 90.1.” The administrative and enforcement provisions of Standard 90.1, including submittal, inspection and verification, and recording and reporting are superseded by this code, unless specifically noted in these provisions.

E101.4.2.1 Compliance paths. Energy efficiency construction shall comply with Section 4.2.1 of Standard 90.1. Normative and informative appendices of Standard 90.1 are only applicable to compliance paths within Standard 90.1.

SECTION E103 APPLICABILITY

E103.1 General. The following provisions are in addition to the requirements of Section 102 of the *Building Code*.

E103.2 Existing structures. Except as specified in Sections E103.2.1 through E103.2.2.3, 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.

E103.2.1 Change in space conditioning. Where unconditioned space or semiheated space in a building is converted to a conditioned space, such conditioned space shall be brought into compliance with the applicable requirements of Standard 90.1 that would apply to the building envelope, heating, ventilating, air-conditioning, service water heating, power lighting, and other systems and equipment of the space as if the building was new.

E103.2.2 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 energy provisions for new construction without requiring the unaltered portion(s) of the existing building or building system to comply. 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.

E103.2.2.1 Additions. Additions to existing buildings shall comply with Section 4.2.1.2 of Standard 90.1.

E103.2.2.2 Alterations. Alterations to existing buildings shall comply with Section 4.2.1.3 of Standard 90.1.

E103.2.2.3 Historic buildings. The exception to Section 4.2.1.3 of Standard 90.1 shall apply to *historic buildings*.

SECTION E104 CONSTRUCTION DOCUMENTS

E104.1 General. The following provisions are in addition to the requirements of Section 107 of the *Building Code*.

E104.2 Energy efficiency information on the construction documents. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include but are not limited to, as applicable, insulation materials and their *R*-values; fenestration *U*-factors and SHGCs; system design criteria; mechanical and service water heating system and equipment types, sizes and efficiencies; economizer description; equipment and system controls; fan motor horsepower (hp) and

COMMERCIAL ENERGY PROVISIONS

controls; duct sealing, duct and pipe insulation and location; daylight areas on floor plans; lighting fixture schedule with wattage and control narrative; air sealing details; and COMcheck compliance report or equivalent State of Oregon Building Codes Division form. Plans and specifications shall include requirements for submittal information required by Sections 5.7, 6.7, 7.7, 8.7, and 9.7 of Standard 90.1. The *building official* shall not require or expect physical copies of record drawings, manuals, test reports, or energy reporting.

Exception: The *building official* is authorized to waive the requirements for construction documents, COMcheck reports, or other supporting data if the code official determines these are not necessary to confirm compliance with this code.

E104.2.1 Oregon Zero Energy Ready Commercial Code form. Construction documents for new buildings shall include the Oregon Zero Energy Ready Compliance Form, including a ZERO Code Calculator report (See ZERO-Code.org/energy-calculator/).

Note: For reference only. Not adopted by the State of Oregon, Building Codes Division, as part of the *state building code*.

The Oregon Department of Energy administers the 1.5% for Green Energy Technology program for public buildings. New construction and major renovation projects for public buildings are required to evaluate and install Green Energy Technology and report to the Oregon Department of Energy in accordance with Oregon Revised Statute (ORS) Chapter 279C, Section 279C.527-528 and Oregon Administrative Rule (OAR) Chapter 330, Division 135. See Oregon.gov/energy

SECTION E105 INSPECTIONS

E105.1 General. The following provisions are in addition to the requirements of Section 110 of the *Building Code*.

E105.2 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope air sealing, envelope insulation *R-values* and *U-factors*, fenestration *U-factor*, duct system insulation *R-value*, and HVAC and water-heating equipment efficiency. Inspection and verification sections included in Standard 90.1 are not enforceable under this code, unless specifically included in this section.

SECTION E201 DEFINITIONS

E201.1 General. The terms, abbreviations, and acronyms defined in Chapter 3 of Standard 90.1 shall apply to this code where it is not defined in Section 201.2 of the *Building Code* or in Section E201.2 of this code. Terms that are not defined shall have their ordinarily accepted meanings within the context in which they are used.

E201.2 Definitions. The following definitions are in addition to or replace definitions in Standard 90.1.

adopting authority: The Building Codes Division of the Oregon Department of Consumer and Business Services.

alteration: (90.1 definition is necessary to avoid “repair” definition and maintain unaltered scope of 90.1) a replacement or addition to a building or its systems and equipment; routine maintenance, repair, and service, or a change in the building’s use classification or category shall not constitute an alteration

authority having jurisdiction: The adopting authority or the authorized building official.

design professional: see *Building Code* definition of registered design professional.

historic: historic building per the Building Code.

low-rise residential buildings: residential structures regulated under the Residential Code or Section 1301.2 of this code.

plenum: a compartment or chamber to which one or more ducts are connected, that forms a part of the air distribution system, and that is not used for occupancy or storage. A plenum often is formed in part or in total by portions of the building.

purchased energy rates: costs for units of energy or power purchased at the building site. These costs may include energy costs as well as costs for power demand as determined by the adopting authority. Energy unit costs posted by the adopting authority shall be used in energy cost budget calculations.

rating authority: the organization or agency that adopts or sanctions use of Normative Appendix G when quantifying performance that exceeds requirements of this standard.

residential: spaces in buildings used primarily for living and sleeping. Residential spaces include, but are not limited to, dwelling units, hotel/motel guest rooms, dormitories, nursing homes, patient rooms in hospitals, lodging houses, fraternity/sorority houses, hostels, prisons, and fire stations.

seal class A: a ductwork-sealing category that requires sealing all transverse joints, longitudinal seams, and duct wall penetrations. Duct wall penetrations are openings made by pipes, holes, conduit, tie rods, or wires. Longitudinal seams are joints oriented in the direction of airflow. Transverse joints are connections of two-duct sections oriented perpendicular to airflow.

semiheated space: an enclosed space within a building that is heated by a heating system whose output capacity is greater than or equal to 3.4 Btu/h·ft² of floor area but is not a conditioned space.

unconditioned space: an enclosed space within a building that is not a conditioned space or a semiheated space, including automatic sprinkler riser rooms and fire pump rooms per Section 902 of the Building Code. Crawlspace, attics, and parking garages with natural or mechanical ventilation are not considered enclosed spaces.

PART II MULTI-FAMILY ENERGY PROVISIONS

The 2019 Oregon Zero Energy Ready Commercial Code, Part II, multi-family energy provisions, consists of the following:

- Chapter 1 of the Oregon Structural Specialty Code (OSSC), including specific modifications as shown below
- 2018 International Energy Conservation Code (IECC)—Commercial Provisions, including specific modifications as shown below

SECTION EM101 GENERAL

EM101.1 Title. These provisions are Chapter 13 of the *Oregon Structural Specialty Code (OSSC)* Section 1301.1 exception for multi-family energy compliance and shall be referred to herein as “this code.” The OSSC shall be referred to herein as the “*Building Code*.”

Sections EM102 through EM104 are specific to this code and additional to the requirements of Chapter 1 of the *Building Code*.

SECTION EM102 SCOPE AND ADOPTED STANDARDS

EM102.1 Scope. This code applies to Group R-2, R-3, and R-4 buildings, three stories and fewer above the finished grade, designed and constructed under the *Building Code*.

EM102.2 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.

EM102.3 Adopted standards.

EM102.3.1 Administration and enforcement. This code is administered and enforced under the provisions and authority granted in Chapter 1 of the *Building Code* with the energy specific Sections EM101 through EM104 of this code.

EM102.3.2 Construction provisions. The commercial energy [CE] provisions of the *2018 International Energy Conservation Code (IECC)* shall serve as the construction provisions for this code, and shall be referred to herein as “the IECC.” The modifications in EM103 and EM104 shall apply.

The administrative and enforcement provisions of the IECC, including submittal, inspection and verification, and recording and reporting are superseded by this code, unless specifically noted in these provisions. The residential provisions [RE] of the *2018 International Energy Conservation Code (IECC)* shall not apply.

SECTION EM103 APPLICABILITY

EM103.1 General. The following provisions are additional to the requirements of Section 102 of the *Building Code*.

EM103.2 Referenced codes and standards. References to the *International Building Code* or the *Building Code* shall mean the *Oregon Structural Specialty Code* as adopted by OAR 918-460-0100.

References to the *International Electrical Code*, the *NFPA 70*, or the *Electrical Code* shall mean the *Oregon Electrical Specialty Code* as adopted by OAR 918-400-0455.

References to the *International Fuel Gas Code* shall mean the *Oregon Mechanical Specialty Code, Appendix C* as adopted by OAR 918-440-0010.

References to the *International Mechanical Code* or the *Mechanical Code* shall mean the *Oregon Mechanical Specialty Code* as adopted by OAR 918-440-0010.

References to the *International Plumbing Code* or the *Plumbing Code* shall mean the *Oregon Plumbing Specialty Code* as adopted by OAR 918-750-0110.

References to the *International Residential Code* or the *Residential Code* shall mean the *Oregon Residential Specialty Code* as adopted by OAR 918-480-0005.

EM103.3 Existing structures. Except as specified in Sections EM103.3.1 through EM103.3.2, 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.

EM103.3.1 Change in space conditioning. Where unconditioned space or semiheated space in a building is converted to a conditioned space, such conditioned space shall be brought into compliance with the applicable requirements of the IECC that would apply to the building envelope, heating, ventilating, air-conditioning, service water heating, power lighting, and other systems and equipment of the space as if the building was new.

EM103.3.2 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 energy provisions for new construction without requiring the unaltered portion(s) of the existing building or building system to comply. 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.

SECTION EM104 SUBMITTAL DOCUMENTS

EM104.1 General. The following provisions are additional to the requirements of Section 107 of the *Building Code*.

EM104.2 Energy efficiency information on the construction documents. Construction documents shall be of sufficient clarity

MULTI-FAMILY ENERGY PROVISIONS

to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include but are not limited to, as applicable, insulation materials and their *R*-values; fenestration *U*-factors and SHGCs; system design criteria; mechanical and service water heating system and equipment types, sizes and efficiencies; economizer description; equipment and system controls; fan motor horsepower (hp) and controls; duct sealing, duct and pipe insulation and location; lighting fixture schedule with wattage and control narrative; air sealing details; and COMcheck compliance report or equivalent division form. The *building official* shall not require or expect physical copies of record drawings, manuals, test reports, or energy reporting.

Exception: The *building official* is authorized to waive the requirements for construction documents, COMcheck reports, or other supporting data if the code official determines these are not necessary to confirm compliance with this code.

SECTION EM105 INSPECTIONS

EM104.1 General. The following provisions are additional to the requirements of Section 110 of the *Building Code*.

EM104.2 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope air sealing, envelope insulation *R-values* and *U*-factors, fenestration *U*-factor, duct system insulation *R*-value, and HVAC and water-heating equipment efficiency.

SECTION EM201 DEFINITIONS

EM201.1 General. The terms, abbreviations, and acronyms defined in Chapter 2 of the IECC shall apply to this code where it is not defined in Section 201.2 of the *Building Code* or in Section EM201.2 of this code. Terms that are not defined shall have their ordinarily accepted meanings within the context in which they are used.

EM201.2 Definitions. The following definitions are additional to or replace definitions in the IECC.

BUILDING OFFICIAL. The officer charged with the administration and enforcement of this code, or a duly authorized representative.

CODE OFFICIAL. See "Building Official."

RESIDENTIAL BUILDING. For this code, includes buildings regulated by the *Residential Code*.

SECTION EM301 MODIFICATIONS TO IECC CHAPTER 4 COMMERCIAL ENERGY PROVISIONS

EM301.1 IECC Section C403. The following provisions replace the indicated sections in the IECC.

IECC C403.7.2 Enclosed parking garage ventilation

controls. Enclosed parking garages used for storing or handling automobiles operating under their own power shall employ contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels in accordance with *Mechanical Code* provisions. Failure of contamination sensing devices shall cause the exhaust fans to operate continuously at design airflow.

Exceptions:

1. Garages with a total exhaust capacity less than 8,000 cfm (3 775 L/s) with ventilation systems that do not utilize heating or mechanical cooling.
2. Garages that have a garage area to ventilation system motor nameplate power ratio that exceeds 1125 cfm/hp (710 L/s/kW) and do not utilize heating or mechanical cooling.

EM301.2 IECC Section C405. The following provisions replace the indicated sections in the IECC.

IECC C405.1 General. This section covers lighting system controls, the maximum lighting power for interior and exterior applications and electrical energy consumption. No less than 90 percent of the lighting serving *dwelling units* shall be provided by lamps with an efficacy of not less than 65 lm/W or light fixtures with an efficacy of not less than 55 lm/W, or comply with Sections C405.2.4 and C405.3. *Sleeping units* shall comply with Section C405.2.4, and with Section C405.3 or not less than 90 percent of the lighting serving *sleeping units* shall be provided by lamps with an efficacy of not less than 65 lm/W or light fixtures with an efficacy of not less than 55 lm/W. Lighting installed in walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with the lighting requirements of Section C403.10.1 or C403.10.2.

EM301.3 IECC Section C406. The following provisions replace the indicated sections in the IECC.

IECC C406.6 Dedicated outdoor air system. Buildings regulated by Section C403 shall be equipped with a dedicated outdoor air system and shall comply with all of the following:

1. Outdoor air shall be provided to each zone by a dedicated outdoor air system that delivers 100-percent outdoor air without requiring operation of the heating and cooling system fans for ventilation air delivery.

2. The dedicated outdoor air system shall include an *energy recovery ventilation system* in accordance with Section C403.7.4, configured to provide a change in enthalpy of not less than a 70 percent difference between the outdoor air and return enthalpies, at design conditions.
3. The equipment and controls shall be configured to automatically turn off zone heating and cooling systems when there is no call for heating or cooling in the zone.

Exception: Fans used for heating and cooling using less than 0.1 Watts per cfm may operate when space temperatures are within the setpoint deadband in accordance with Section C403.4.1.2.

EM301.4 IECC Table C407.5.1(1). The following replaces the indicated information in IECC Table C407.5.1(1).

EM301.5 IECC Section C408. Section C408 of the IECC is deleted in its entirety.

**SECTION EM302
MODIFICATIONS TO IECC CHAPTER 5
COMMERCIAL ENERGY PROVISIONS**

EM302.1 IECC Section C505. Section C505 of the IECC is deleted in its entirety.

**IECC TABLE C407.5.1(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS**

The vertical fenestration other than opaque doors section of this table is replaced with the following:

Vertical fenestration other than opaque doors	Area 1. The proposed vertical fenestration area; where the proposed vertical fenestration area is less than 30 percent of above-grade wall area. 2. 30 percent of above-grade wall area where the proposed vertical fenestration area is 30 percent or more of the above-grade wall area.	As proposed
	<i>U</i> -factor: as specified in Table C402.	As proposed
	SHGC: as specified in Table C402.4 except that for climates with no requirement (NR) SHGC = 0.40 shall be used	As proposed
	External shading and PF: None	As proposed