Statewide Alternate Method
November 2018

No. 18-02
Oregon Zero Code Efficiency Standard

(Ref.: ORS 455.060)

Statewide Alternate Methods *are approved by the Division administrator in consultation with the appropriate advisory board. The advisory board's review includes technical and scientific facts of the proposed alternate method. In addition:*

- *Building officials shall approve the use of any material, design or method of construction addressed in a statewide alternate method;*
- *The decision to use a statewide alternate method is at the discretion of the applicant; and*
- *Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter.*

Code / edition: 2014 Oregon Structural Specialty Code (OSSC)

Date: Nov. 13, 2018

Subject: Adoption of the Oregon Zero Code Efficiency Standard

Based on the Architecture 2030 ZERO Code and ANSI/ASHRAE/IES Standard 90.1-2016 (Standard 90.1-2016) as a statewide alternate method to the provisions of Chapter 13 in the 2014 OSSC

Background:

The 2014 OSSC, an updated version of the 2012 International Building Code (IBC), is the adopted structural code in the State of Oregon. Part one of Architecture 2030's ZERO Code incorporates Standard 90.1-2016 for energy efficiency requirements, a national model code that has been incorporated into many programs to advance energy efficiency. Part two of the Architecture 2030 ZERO Code creates a system for on-site and off-site renewable energy to meet net zero energy goals. This statewide alternate method does not include part two of the Architecture 2030 ZERO Code as a mandatory provision, but creates an Oregon framework for achieving efficient commercial buildings.

This statewide alternate method, known as the Oregon Zero Code Efficiency Standard, consists of Standard 90.1-2016 (verified via COM*check*), identification of projected energy use for the proposed building, and identification of how much onsite or offsite renewable energy would be required to achieve a net zero building. The Oregon Zero Code Efficiency Standard can be used in Oregon instead of Chapter 13 of the OSSC.

Discussion:

The Oregon Zero Code Efficiency Standard consists of three parts:

1. Compliance with Standard 90.1-2016 (verified via COM*check*)
2. Identification of the projected energy use for the proposed building
3. Identification of the required amount of onsite or offsite renewable energy to achieve a net zero building

Standard 90.1-2016 is a contemporary energy code promoting energy efficiency and conservation. It is a national consensus energy code recognized by the federal government and by jurisdictions across the country. It includes both a prescriptive and performance path.

To verify compliance with Standard 90.1-2016, the Oregon Zero Code incorporates COM*check*. COM*check* is a web based tool, and is fully programmed to demonstrate compliance with Standard 90.1-2016. The COM*check* tool shows whether a building will meet the requirements of the code, maintaining consistency and predictability for builders and building officials.

The second part of the Oregon Zero Code Efficiency Standard uses the ZERO Code Calculator, a web based tool created by Architecture 2030. It will allow a building owner to calculate a building's projected future energy use. The ZERO Code Calculator also projects energy use broken down into seven end use categories (heating, cooling, fans, interior lighting, plug loads, service hot water, and other), generating valuable information for designers and owners. This information can then be used by the end user to further maximize the post-construction energy efficiency of the building by adjusting building design inputs to achieve the desired result.

The third part of the Oregon Zero Code Efficiency Standard uses the ZERO Code Calculator to identify the potential for onsite and offsite renewable energy needed to achieve a net zero building. It accounts for both prescriptive and performance path options, allowing flexibility and creativity in identifying how to achieve net zero through a consistent framework.

The three parts of the Oregon Zero Code Efficiency Standard will be plugged into a uniform, statewide energy permit application (the Oregon Zero Code Form). The purpose of the Oregon Zero Code Form is to provide consistency and predictability for designers and permit applicants. It also provides a mechanism to ensure the identification of renewables is consistent. The Oregon Zero Code Form (sample attached as Appendix A) will demonstrate that the proposed building complies with the statewide alternate method, projected energy use of the proposed building, and onsite and offsite renewable energy needed to achieve net zero. The energy permit application will demonstrate energy compliance, and will also provide valuable information as part of the building permit file.

The ZERO Code Calculator is for new construction. Additions and alterations are not required to submit the ZERO Code Calculator outputs for the second and third parts of the Oregon Zero Code Form.

Using the Architecture 2030 tools as the foundation for the Oregon Zero Code Efficiency Standard also allows for the incorporation of the Standard 90.1-2016 cost analysis to determine the economic feasibility of code items during the national model code review process.

The Oregon Zero Code Efficiency Standard creates a predictable and uniform system to ensure energy compliance in Oregon. This statewide alternate method adds another choice for building professionals, designers, contractors, and owners to meet the Oregon statewide building code for energy efficiency compliance.

Conclusion:

Accordingly, the Oregon Zero Code Efficiency Standard serves as an effective alternate to Chapter 13 of the 2014 OSSC for the construction of buildings in Oregon subject to the following:

1. The use of this alternate method constitutes a separate compliance path from Chapter 13 of the 2014 OSSC in that designs must comply with the Oregon Zero Code Form and this statewide alternate method in its entirety. Limited cross-over applications are allowed where approved by the building official.

2. Applications for a permit under this alternate method shall include a COM*check* compliance report for Standard 90.1-2016, a report from the ZERO Code Calculator, and the Oregon Zero Code Form. The form includes projected energy use of the building and an estimate of the on-site and off-site renewable energy necessary to achieve a net zero energy structure.

3. Specific Oregon amendments as noted below are considered part of this alternate method.

The technical and scientific facts for the Statewide Alternate Method are approved.

Signature on file	**11/13/2018**
Mark Long, Administrator Building Codes Division	Date

The following Oregon amendments to Standard 90.1-2016 are made part of the Oregon Zero Code statewide alternate method: (*Underlined text* denotes an addition and ~~*Strikethrough text*~~ *denotes a deletion)*

Chapter 1—Purpose

1.1 To establish the minimum energy efficiency requirements of commercial buildings ~~other than low-rise residential buildings~~ constructed under the *Oregon Structural Specialty Code* for

a. design, *construction*, and a plan for operation and maintenance; and

b. utilization of on-site, renewable *energy* resources.

Chapter 2—Scope

2.1 This standard, as an alternate compliance path to Chapter 13 of the *Oregon Structural Specialty Code*, provides… *(remainder unchanged)*

2.2 The provisions of this standard do not apply to

a. single-family houses, multi-family structures of 3 stories or fewer above *grade*, manufactured houses (mobile homes), and manufactured houses (modular) or

b. structures constructed under the *Oregon Residential Specialty Code*

c. *buildings* that use neither electricity or *fossil fuel*

d. agricultural structures: greenhouses and exempt agricultural buildings in accordance with the *Oregon Structural Specialty Code* and Oregon statute.

Chapter 4—Administration and Enforcement

4.1.1.2 General Requirements for Additions, Alterations, Renovations and Repairs

Additions, alterations, renovations and repairs to an existing building, building system, or portion thereof shall conform to the provisions of this standard as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply.

(Sections 4.1.1.2 – 4.1.1.5 are renumbered accordingly)

4.1.2 Administrative Requirements

Administrative requirements are specified in Chapter 1 of the *Oregon Structural Specialty Code*. ~~relating to permit requirements, enforcement by the authority having jurisdiction, locally adopted energy standards, interpretations claims of exemption and rights of appeal are specified by the authority having jurisdiction.~~

Delete: 4.1.3 Alternative Materials, Materials of Construction, or Design
Delete: 4.1.4 Validity
Delete: 4.1.5 Other Laws
Delete: 4.2.5 Verification and Commissioning Reporting

4.2.2.1 Construction Details

Compliance documents shall show all the pertinent data and features of the building, equipment and systems in sufficient detail to permit a determination of compliance with the requirements of this standard and Chapter 1 of the *Oregon Structural Specialty Code*.

All submissions for permit shall be made on the Oregon Zero Code Form, including a COM*check* compliance report for Standard 90.1-2016 and a ZERO Code Calculator report (See https://zero-code.org/energy-calculator/).

4.2.4 Inspections

All building construction, additions, or alterations work subject to the provisions of this standard shall remain accessible and exposed for inspection purposes until approved in accordance with ~~the procedures specified by the building official~~ Chapter 1 of the *Oregon Structural Specialty Code*.

Appendix A: Form 18-02 Oregon Zero Code

State of Oregon
Oregon Zero Code Form (SAM 18-02)

This form provides the necessary required information to demonstrate compliance with the Oregon Zero Code and must be provided to the local Building Code Official at time of submitting the plan review documents. For additions, alterations, renovations and repairs, Parts II and III are not required.

BUILDING INFORMATION

Applicant name: _____ **Phone number:** _____

Project name: _____

Address / location: _____

Primary building use:
(As indicated on ZERO Code report) _____ **Number of floors:** _____

Part I COM*check* information

Compliance path:

- ❑ **Performance path**
- ❑ **Prescriptive path**

COM*check* (Standard 90.1) results:

- ❑ **Pass**
- ❑ **Fail** *If using the performance path, submit the energy model report with this form

Prepared by or under the supervisions of: _____ **Date:** _____

Part II Projected energy use

Enter the ZERO Code Calculator results for projected energy use.

Estimated building energy consumption: _____ MBtu/yr

Part III Estimated available renewables for the building

Enter the ZERO Code Calculator results for offsets.

Total renewable energy necessary to achieve Net Zero: _____ MBtu/yr

On-site potential PV rated capacity _____ kW

CHECKLIST AND APPLICANT SIGNATURE

COM*check* report and ZERO Code Calculator report must be submitted with this form.

- ❑ **COM*check* report is attached**
- ❑ **Energy model report is attached** (if COM*check* failed)
- ❑ **ZERO Code Calculator report is attached**

Print Name	**Signature**	**Date**