



**Bureau of  
Development  
Services** FROM CONCEPT  
TO CONSTRUCTION

## ENERGY CODE CHANGES: City of Portland's Progress Implementing ASHRAE 90.1

JODY ORRISON | CITY OF PORTLAND | NOVEMBER 2022



*“BCD... is directed to adopt building energy efficiency goals for 2030... at least 60 percent reduction in new building annual site consumption of energy, excluding electricity used for transportation or appliances, from the 2006 Oregon residential and commercial codes.”*

## Energy efficiency goals for new construction

On March 10, 2020, the Governor issued [Executive Order \(EO\) 20-04](#), with performance-based directives intended to build upon the ongoing prescriptive requirements of [EO 17-20](#).

## Energy efficiency goals for 2030

EO 20-04 requires the division, through its advisory boards, to adopt building energy efficiency goals for 2030, for new residential and commercial construction, representing a 60 percent reduction in new building annual site consumption of energy from the adopted 2006 Oregon codes.

- [2004 Oregon Structural Specialty Code \(OSSC\), Chapter 13](#)
- [2005 Oregon Residential Specialty Code \(ORSC\), Chapter 11](#)
- [2005 ORSC modeling inputs and assumptions](#)

## Code progress and updates

EO 20-04 requires the division, through its advisory boards, to evaluate and report on Oregon's current progress toward achieving the goals for new residential and commercial buildings, and options for achieving that goal over the next three code cycles and then submit a report on the current progress every three years thereafter.

- [BCD EO 20-04 Implementation Report - May 2020](#)
- [BCD EO 20-04 Report - September 2020](#)

## Oregon Reach Code

EO 20-04 requires the division, through its advisory boards, to adopt a reach code when the ORSC Chapter 11 and OSSC Chapter 13 energy provisions are updated. [Follow the Oregon Reach Code adoption process.](#)

## Where we rank...

Oregon is a national leader on energy efficient building codes and the executive orders build upon that work.

Where Oregon ranks among other states.

## Get involved

Get more information on how to participate in achieving the goals set forth in the executive orders.

[Sign up for email updates >>](#)

## Resources

- [Built Environment Efficiency Working Group](#)
- [Executive Order 20-04](#)
- [Executive Order 17-20](#)
- [Energy efficiency code program](#)

<https://www.oregon.gov/bcd/Pages/energy-eo.aspx>

\*Previous Adoptions: October 2019 – adopted ASHRAE 90.1-2016 & October 2021 – adopted ASHRAE 90.1-2019



## Documents to Submit with Permit:

- COMchecks (Envelope, Mechanical, Lighting)
- Oregon-specific forms

(<https://www.Oregon.gov/bcd/codes-stand/Pages/energy-commercial-compliance.aspx>)

- COMcheck supplement
- 2021 OEESC Compliance Form
- ZERO Code Calculator



## Commercial Construction Energy Forms Required At The Time Of Permit Submittal:

- + 2021 OEESC Compliance form (new buildings only)

[oeesc-compliance-form.pdf \(oregon.gov\)](https://www.oregon.gov/oeesc-compliance-form.pdf)

- + ZERO Code 2.0 Calculator report (new buildings only)

[ENERGY CALCULATOR – ZERO Code \(zero-code.org\)](https://zero-code.org)



### Energy Code Compliance

#### 2021 Oregon Energy Efficiency Specialty Code (OEESC) Compliance

This form provides the required information to demonstrate compliance with the 2021 Oregon Energy Efficiency Specialty Code (OEESC), Chapter 13 of the 2019 Oregon Structural Specialty Code, and must be provided to the building official at the time of submitting the plan review documents.

<b>Jurisdiction:</b>		
<b>BUILDING INFORMATION</b>		
Applicant name:	Phone number:	
Project name:		
Address / location:		
City:	State: OR	ZIP:
Primary building use (As indicated on ZERO Code Calculator report):		Number of floors:
<b>Part I COMcheck information</b>		
Compliance path:	COMcheck (Standard 90.1-2019) results:	
<input type="checkbox"/> Performance path	<input type="checkbox"/> Pass	
<input type="checkbox"/> Prescriptive path	<input type="checkbox"/> Fail *For performance path, submit the energy model report with this form.	
Prepared by or under the supervision of:		Date:
<b>Part II Projected energy use</b>		
Enter the ZERO Code 2.0 Calculator results for projected energy use.		
Estimated building energy consumption: ____ MBtu/yr		

#### ABOUT YOUR BUILDING

Code Pathway:  Prescriptive  Performance

Standard <sup>?</sup>  \*

Country  \*

City <sup>?</sup>  \*

Number of Stories  \*

Primary Building Use  \*

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#### ON-SITE PV SYSTEMS

Enter on-site PV system generation potential below, or estimate on-site PV system generation potential using PVWatts. If your building has multiple PV systems enter them below.

Use PVWatts  Enter Generation Potential

**Set Default Values** <sup>?</sup> delete

Estimated Area for Collectors  \*  \*

Module Type  \*



# During Plan Review:

1) Air barrier design and testing – choose:

- Blower door test OR
- Independent Third-Party review – design and installation

2) Sign Portland’s “Energy Efficiency Compliance” form

\*We are reviewing intent of electrical design during CO permit, but details of lighting design, controls, electric meter monitoring, and EV parking reviewed during ET plan review.



## Energy Efficiency Compliance Submittal Requirements Acknowledgment

As verification that the work complies with the requirements of ASHRAE 90.1-2019, documentation of building systems is required to be provided to the Building Inspector prior to issuance of a Certificate of Occupancy. That documentation includes the forms identified below. To assist in the processing of the forms, the following information is required to be completed and returned before the Energy Code Review can be approved during the project’s Plan Review stage.

**Instructions – Parts B and C of this Acknowledgement Form must be fully completed by the Owner (or Architect acting as the owner’s agent) in order to obtain your permit.**  
When complete, upload a copy of this form to the Documents folder in ePlans. Provide an ePlans response indicating the document has been added.

Application # 22-123456-CO Date: October 24, 2022  
 Project Name: All That Jazz  
 Site Address: 111 SE 100TH AVE  
 Architect of Record (Firm) THE ARCHITECTS \*Bob Fosse\* Phone # (503) 123-0000

**PART A – COMMISSIONING COMPLIANCE** per ASHRAE 90.1-2019 Section 4.2.5.2 Building Systems Commissioning

Commissioning Compliance Checklist Form (required for all projects)  
 A blank checklist has been made available in the City Attachments folder for this permit in ProjectDox for your use. No further action on this checklist is required prior to permit issuance. The completed checklist shall be provided to the Building Inspector prior to issuance of the Certificate of Occupancy.

**PART B – AIR BARRIER COMPLIANCE** per ASHRAE 90.1-2019 Section 5.4.3.1.1 Whole Building Air Leakage

Prior to issuance of a Certificate of Occupancy, applicants will be required to submit a completed Blower Door Results Reporting form (available here: <https://www.oregon.gov/bcd/codes-stand/Documents/oeesc-blower-door.pdf>)  
 In addition, prior to permit review approval, the project owner (or the Architect acting as the Owner’s Agent) must indicate the proposed compliance path that will be followed according to that form. Select one option below:

- Blower Door Test results will be submitted
- OR**
- Continuous air barrier design review and installation field inspections in accordance with Section 5.9.1.2, performed by independent third-party. See the [reporting form](#), exception #3 for detailed information.

\_\_\_\_\_  
 Third-Party Reviewer and Inspector Name/Company

\_\_\_\_\_  
 Phone

**PART C This portion must be completed by the Owner or Architect of Record**

By completing Part C the project owner (or the Architect acting as the Owner’s Agent) hereby acknowledges the requirement for submittal of the above completed forms as a condition of approval of Final Inspection.

Print Name \_\_\_\_\_ Date \_\_\_\_\_  
 (Project Owner or the Architect acting as the Owner’s Agent)

Firm \_\_\_\_\_ Phone \_\_\_\_\_

The project owner shall provide a copy of this Acknowledgement Form to the General Contractor.

APPLICANT – COMPLETE PARTS B and C



## By the End of Construction:

Blower door results reporting form  
(same BCD website:

<https://www.oregon.gov/bcd/codes-stand/Pages/energy-commercial-compliance.aspx>)

Final summary report for electrical energy design  
(confirms electrical design was installed in  
compliance with ASHRAE 90.1 requirements and as  
designed, similar to structural observation report) –  
**coming soon!**



### Blower Door Results Reporting

#### 2021 Oregon Energy Efficiency Specialty Code Compliance

This form provides the required information to demonstrate compliance with Section 5.4.3.1.1 Whole-Building Air Leakage in Chapter 5 of ASHRAE 90.1-2019, which is the 2021 Oregon Energy Efficiency Specialty Code (OEESC). It must be provided to the local building official after testing and before the Certificate of Occupancy is issued.

<b>Jurisdiction:</b>			
<b>COMPANY INFORMATION</b>			
Company name:		CCB/EEAST no.:	
Address (Street or P.O. Box):		Phone:	
City:	State:	Zip:	
Technician's name:		Email:	
<b>PROJECT INFORMATION</b>			
Street address:		Permit no.:	
City:	State: <b>OR</b>	Zip:	
Building use (from COMcheck):		Number of stories:	
Conditioned floor area (SF):		Conditioned volume (CF):	
<b>5.4.3.1.1 Whole-building air leakage<sup>a</sup></b>			
The measured air leakage rate of the <i>building envelope</i> shall not exceed 0.40 cfm/ft <sup>2</sup> under a pressure differential of 0.3 in. of water, with this air leakage rate normalized by the sum of the above-grade and below-grade <i>building envelope</i> areas of the <i>conditioned space</i> and <i>semiheated space</i> .			





## By the End of Construction:

- + Commissioning Compliance Checklist
- + Manuals provided and training completed
- + All systems commissioning completed



CITY OF PORTLAND, OREGON - BUREAU OF DEVELOPMENT SERVICES

1900 SW Fourth Avenue, Portland, Oregon 97201, [www.portlandoregon.gov/bds](http://www.portlandoregon.gov/bds)



### COMMISSIONING COMPLIANCE CHECKLIST

PROJECT INFORMATION	
Permit number:	<input type="text"/>
Street Address:	<input type="text"/>
Description of Work:	<input type="text"/>
Certified Commissioning Professional:	<input type="text"/>

#### **ASHRAE 90.1-2019 Section 4.2.5.2**

Commissioning shall be performed in accordance with this section and Sections 5.9.2, 6.9.2, 7.9.2, 8.9.2, 9.9.2, 10.9.2, 11.2(d), and G1.2.1(c). Commissioning shall use ASHRAE/IES Standard 202 or other generally accepted engineering standards acceptable to the building official. Verification or functional performance testing (FTP) requirements for commissioning are as stated in Section 4.2.5.1. Commissioning shall also document in sufficient detail compliance of the building systems, controls, and building envelope with required provisions of this standard. Commissioning requirements shall be incorporated into the construction documents.

The commissioning provider shall have the necessary training, experience, and FPT equipment. The commissioning team shall include Verification and Testing (V&T) providers. The commissioning provider shall be:

- (a) a third-party entity not associated with the building project,
- (b) owner's qualified employees, or
- (c) an individual associated with the design firm or contractor but not directly associated with design or installation of the building systems, controls, or building envelope being commissioned.



## By the End of Construction:

Completed	Code Section	Information Required	Date
<input type="checkbox"/>	2021 OEESC E104.2, ASHRAE 90.1 5.7.3, 6.7.3, 7.7.3, 8.7.3.2, 9.7.3.2	<b>Manuals, record documents and training have been completed</b> (check box). If not scheduled, provide date for each item below: <input type="checkbox"/> Building operations and maintenance information have been submitted to the owner or scheduled date: <input type="text"/> <input type="checkbox"/> Manuals have been submitted to the owner or scheduled date: <input type="text"/> <input type="checkbox"/> Compliance documentation been submitted to the owner or scheduled date: <input type="text"/> <input type="checkbox"/> Documentation of the training of operating personnel and building occupants on commissioned systems has been submitted to the owner or scheduled date: <input type="text"/>	<input type="text"/>
<input type="checkbox"/>	4.2.5.2.2(a)	<b>Commissioning Plan was used during construction.</b>	<input type="text"/>
<input type="checkbox"/>	4.2.5.2.2(d)	<b>Final Commissioning Report has been submitted to the owner.</b>	<input type="text"/>
<input type="checkbox"/>	6.9.2	<b>Mechanical Systems were included in the commissioning process.</b>	<input type="text"/>
<input type="checkbox"/>	7.9.2	<b>Service Water Heating Systems were included in the commissioning process.</b>	<input type="text"/>
<input type="checkbox"/>	8.9.2	<b>Power systems</b> (Automatic receptacles controls (Section 8.4.2) and energy monitoring (Section 8.4.3) <b>were included in the commissioning process.</b>	<input type="text"/>
<input type="checkbox"/>	9.9.2	<b>Lighting control systems were included in the commissioning process.</b>	<input type="text"/>
<input type="checkbox"/>	10.9.2	<b>Other equipment systems were included in the commissioning process.</b> <input type="checkbox"/> Service water pressure-boosters system controls (10.4.2) or <b>N/A:</b> <input type="text"/> <input type="checkbox"/> Elevator standby mode (10.4.3.3) or <b>N/A:</b> <input type="text"/> <input type="checkbox"/> Whole-building energy monitoring (10.4.5) or <b>N/A:</b> <input type="text"/>	<input type="text"/>

I hereby certify that requirements for Section 4.2.5.2 Building Commissioning Requirements have been completed in accordance with the Oregon Energy Efficiency Specialty Code, including all items above.

Signature:

Date:





## *Commercial Construction Energy Forms Required At The Time Of Permit Submittal (cont.)*

*Envelope - ONE of these two options:*

Standard approach:

COMcheck Building Envelope Report and 2021 OEESC

COMcheck Supplement Form



Simplified approach:

Simplified Building Method – Envelope:

[oeesc-simple-building-envelope.pdf](https://oeesc-simple-building-envelope.pdf) ([oregon.gov](https://oregon.gov))



## *Commercial Construction Energy Forms Required At The Time Of Permit Submittal (cont.)*

*Lighting - ONE of these two options:*

Standard approach:

COMcheck Lighting Report 

Simplified approach:

Simplified Building Method – Lighting:  
[oeesc-simple-building-lighting.pdf \(oregon.gov\)](https://www.oregon.gov/oeesc-simple-building-lighting.pdf)

and COMcheck Lighting Report 



## *Commercial Construction Energy Forms Required At The Time Of Permit Submittal (cont.)*

*Mechanical - ONE of these two options:*

Standard approach:

COMcheck Mechanical Report  **COMcheck-Web™**

Simplified approach:

Simplified Building Method – Mechanical:

[oeesc-simple-building-mechanical.pdf \(oregon.gov\)](https://www.oeesc.org/oeesc-simple-building-mechanical.pdf)



## Energy Code Resources:

### Portland:

<https://www.portland.gov/bds/commercial-permitting/news/2022/6/2/updates-commercial-energy-efficiency-submittal-requirements>

### Oregon Building Codes Division Commercial energy code compliance, training, and resources:

<https://www.oregon.gov/bcd/codes-stand/Pages/energy-commercial-compliance.aspx>

### U.S. Department of Energy Building Energy Codes Program ASHRAE 90.1 Training courses:

[https://www.energycodes.gov/technical-assistance/training?f%5B0%5D=code\\_referenced%3AASHRAE%20Standard%2090.1](https://www.energycodes.gov/technical-assistance/training?f%5B0%5D=code_referenced%3AASHRAE%20Standard%2090.1)

ASHRAE 90.1 Supplemental information. This website includes sample compliance forms (as pdfs) with instructions on how to fill them out and calculation tools (as Excel spreadsheets) intended to facilitate the process of complying with the Standard:

<https://www.ashrae.org/technical-resources/bookstore/supplemental-files/supplemental-files-for-the-standard-90-1-2019-users-manual>

*Questions?*

