March 2025

Code Update Training

2025 Oregon Energy Efficiency Specialty Code (OEESC)

Based on ASHRAE 90.1-2022

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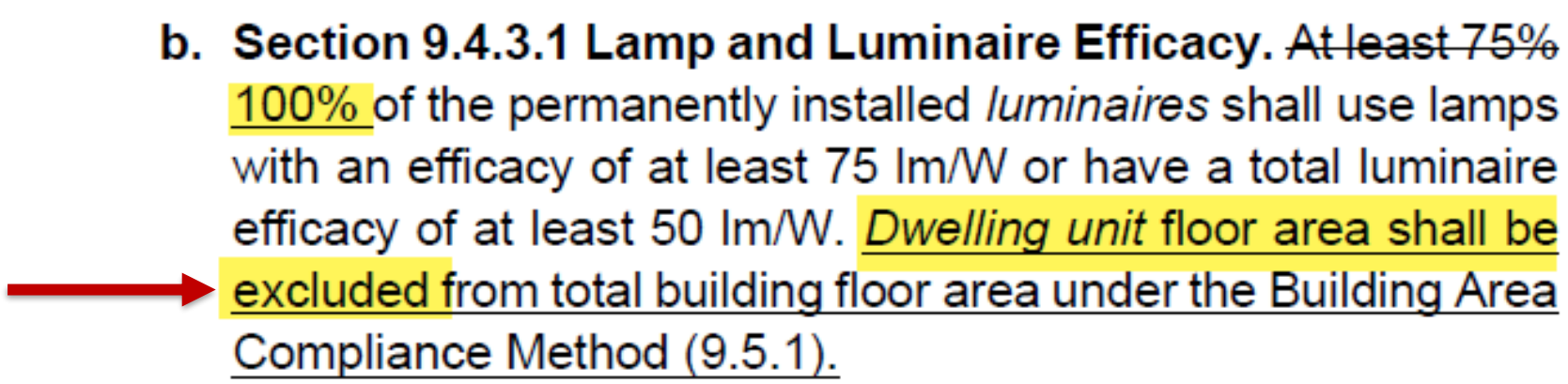
Course Outline

1. 2025 OEESC – Scope & Administration
2. 2025 OEESC - Changes
3. ASHRAE 90.1-2022 - Changes
4. New COM*check Web* - Utilization
5. Additional Training Resources

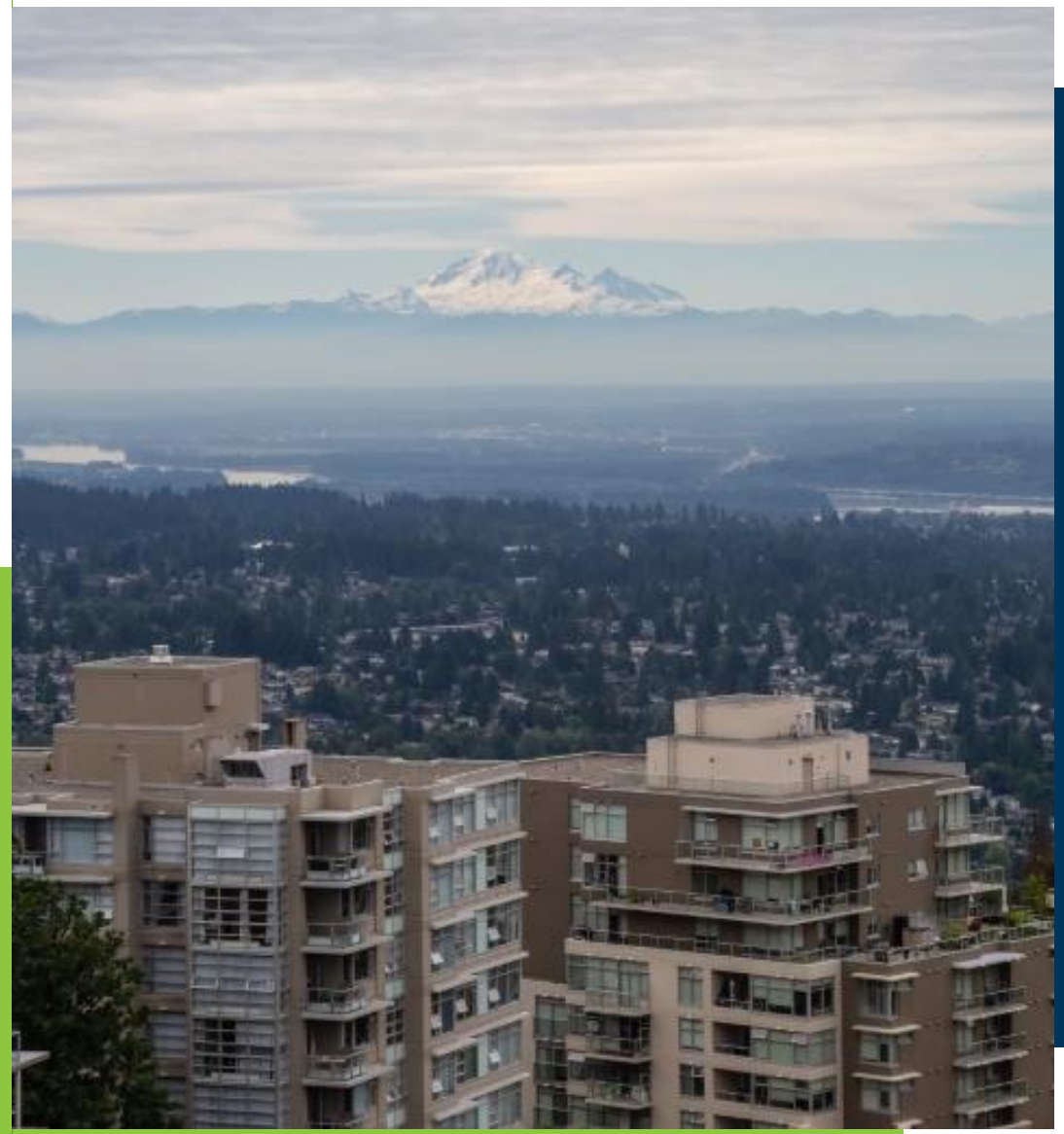
BCD Building Codes Division
Department of Consumer and Business Services

Presentation Format



b. Section 9.4.3.1 Lamp and Luminaire Efficacy. ~~At least 75%~~ 100% of the permanently installed *luminaires* shall use lamps with an efficacy of at least 75 lm/W or have a total luminaire efficacy of at least 50 lm/W. *Dwelling unit* floor area shall be excluded from total building floor area under the Building Area Compliance Method (9.5.1).

- Key language changes are highlighted in yellow
- May include arrows or other key indicators
- Key concepts are explained in *blue text* like this sentence
- "NEW" is used when an entire section is added versus highlighting



2025 Oregon Energy Efficiency Specialty Code (OEESC)

Scope & Administration

2025 OEESC & ASHRAE 90.1

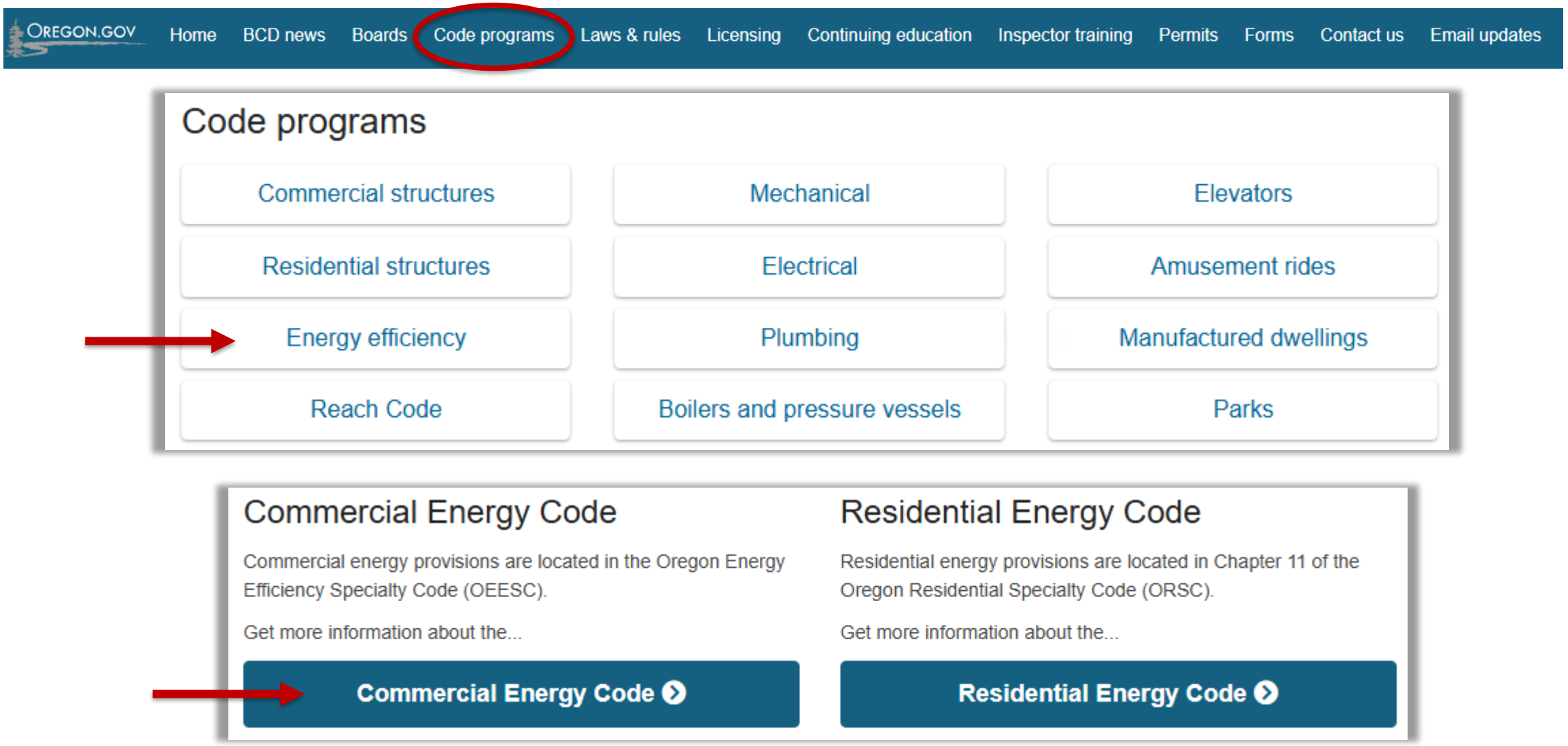
Oregon now adopts the *most recent* version of ASHRAE 90.1, within a year of formal publication, assuming availability/useability of COMcheck

- ASHRAE 90.1-2016 - October 2019
- ASHRAE 90.1-2019 - April 2021
- **ASHRAE 90.1-2022 - January 2025 (with 6-Month phase-in)**

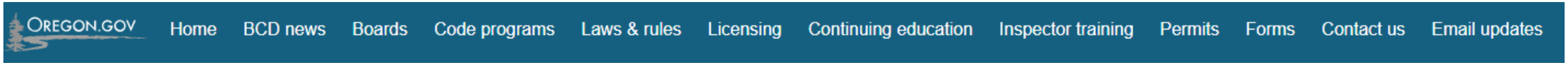
Benefits of utilizing ASHRAE 90.1 include

- Quicker, less resource-intensive, streamlined adoption
- More predictable
- Comprehensive cost analysis

2025 OEESC - Navigation



2025 OEESC – Landing Page



Adopted commercial energy code

2025 Oregon Energy Efficiency Specialty Code (OEESC)

Chapter 13 of the Oregon Structural Specialty Code (OSSC)

- Effective Jan. 1, 2025
- Phase-in period ends July 1, 2025
- Based on ASHRAE Standard 90.1-2022

Access an online version of ASHRAE Standard 90.1-2022

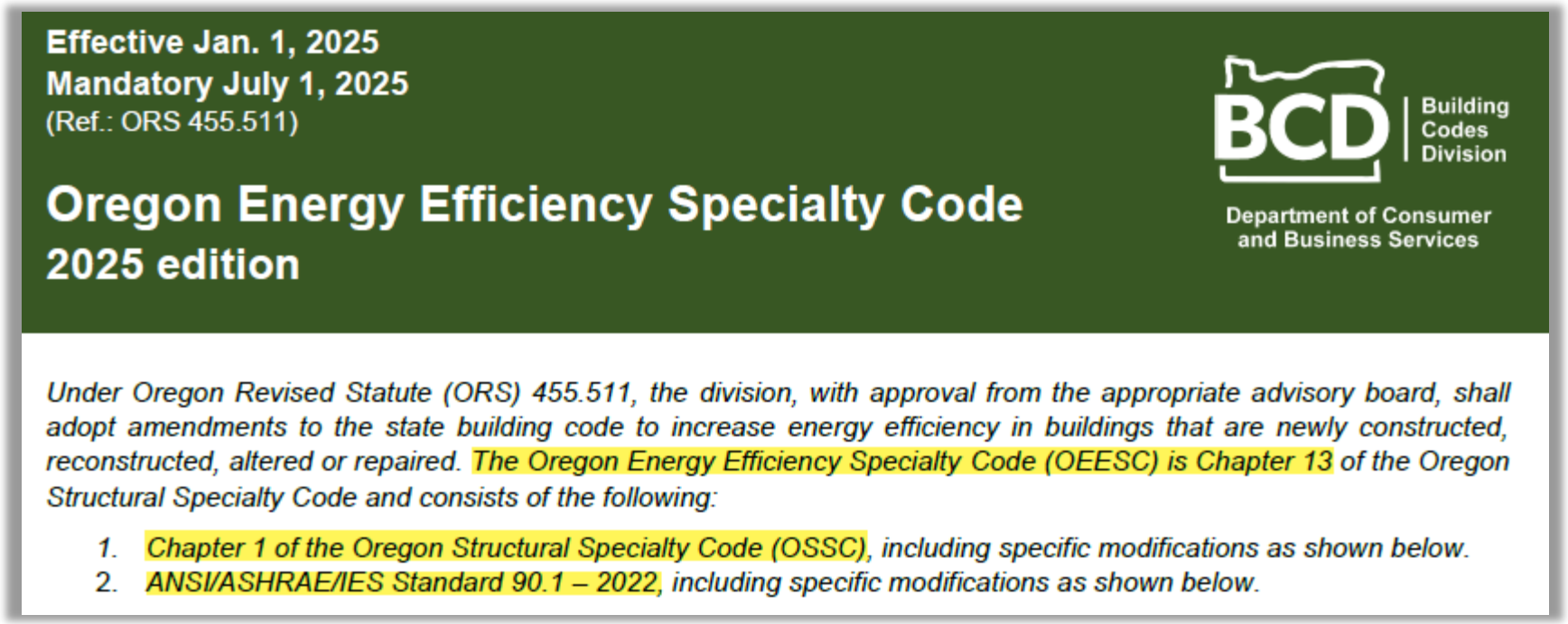
The Oregon Residential Specialty Code (ORSC) applies to 1-2 family dwellings & townhomes classified as Group R-3

All other structures are subject to the OEESC regardless of the number of stories

During the "Phase-in period" customers may utilize *either* the 2021 or 2025 OEESC. The 2025 OEESC is mandatory on July 1.

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

2025 OEESC – Chapters 1 & 13 of OSSC



Effective Jan. 1, 2025
Mandatory July 1, 2025
(Ref.: ORS 455.511)

Oregon Energy Efficiency Specialty Code
2025 edition

BCD Building Codes Division
Department of Consumer and Business Services

Under Oregon Revised Statute (ORS) 455.511, the division, with approval from the appropriate advisory board, shall adopt amendments to the state building code to increase energy efficiency in buildings that are newly constructed, reconstructed, altered or repaired. The Oregon Energy Efficiency Specialty Code (OEESC) is Chapter 13 of the Oregon Structural Specialty Code and consists of the following:

1. *Chapter 1 of the Oregon Structural Specialty Code (OSSC), including specific modifications as shown below.*
2. *ANSI/ASHRAE/IES Standard 90.1 – 2022, including specific modifications as shown below.*

- The OEESC *is* Chapter 13 of the *most current* Oregon Structural Specialty Code (OSSC)
- OSSC Chapter 1 Scope and Administration applies

2025 OEESC – Construction Provisions

E102.3.2 Construction provisions. ANSI/ASHRAE/IES Standard 90.1-2022 shall serve as the construction provisions for this code. ANSI/ASHRAE/IES Standard 90.1-2022 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. Section 1, Purpose, and Section 2, Scope, of Standard 90.1 are not adopted.

- Construction Provisions *are* ASHRAE Standard 90.1-2022
- Section 1 & 2 of ASHRAE are *specifically excluded* as OSSC Section 1 Scope and Administration apply instead

2025 OEESC – Scope & Adopted Standards

SECTION E102—SCOPE AND ADOPTED STANDARDS

E102.1 Scope. This code applies to buildings designed and constructed under the *Building Code*, including *appliances*, *equipment* and services regulated by the *Building Code* that feed directly to, or from the building.

> ***Note:*** *Examples may include, but are not limited to, site lighting powered from the structure, ground-mounted cooling towers and chillers, photo-voltaic systems, and other appliances, or equipment, covered within this code and powered from the regulated structure.*

→ ***low-rise residential buildings:*** residential structures regulated under the *Residential Code*.

Scope and low-rise residential definition modified such that the OEESC includes *any* R-occupancy *not covered* under the ORSC

2025 OEESC - Administration & Enforcement

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 E105 of this code.

Herein lies Oregon's cite-it, write-it authority

2025 OEESC – Existing Buildings

E103.3 Existing structures. Except as specified in Sections E103.3.1 through E103.3.2, 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.

E103.3.2 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.

- Unaltered areas of existing buildings *may remain as-is*
- Only the additions, alterations, renovations, or repairs *shall* conform
- Shall not create an unsafe or hazardous condition

2025 OEESC – Existing Buildings

E103.3.2.1 Additions. *Additions* to existing buildings shall comply with Section 4.2.1.2 of Standard 90.1.

E103.3.2.2 Alterations. *Alterations* to existing buildings shall comply with Section 4.2.1.3 of Standard 90.1.

For *alterations* to *lighting equipment* and *systems* serving interior *spaces* of *buildings* or exterior applications, where Section 4.2.1.3(a) of Standard 90.1 is used for compliance, Section 9.1.1.3 of Standard 90.1 shall apply as amended in Section E301.4(a) of this code.

E103.3.2.3 Historic buildings. The exception to Section 4.2.1.3 of Standard 90.1 is not adopted. Where *approved* by the *building official* in accordance with Section 3412 of the *Building Code*, *alterations* and *additions* necessary for the preservation, restoration, rehabilitation, or continued use of a *historic* building are exempt from this code. *Alterations* and *additions* not pertinent to the historic listing shall comply with this code unless otherwise *approved*.

- Lighting alteration Section *significantly* modified
- Historic buildings exception of ASHRAE is altered
- Alterations and additions *not pertinent* to the historic listing *shall* comply

2025 OEESC – Construction Documents

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, as applicable, shall include but are not limited to: insulation materials and their *R*-values; fenestration *U*-factors and SHGCs; HVAC *system* design criteria; mechanical and service water heating system 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; daylight areas on floor plans; lighting fixture schedule with wattage and control narrative; air sealing details; COM*check* compliance report; and Oregon Energy Compliance Form. Supplemental information necessary to verify compliance with this standard, such as calculations, worksheets, compliance forms, vendor literature, or other data shall be made available when required by the *building official*.

- CD's shall be of sufficient clarity and in sufficient detail which include governed details
- COMcheck report & Oregon Energy Compliance Form *shall* be submitted

2025 OEESC – Construction Documents

Plans and specifications shall include applicable requirements for submittal information and record documents required by Sections 5.7, 6.7, 7.7, 8.7, 9.7, 10.7 and 11.7 of Standard 90.1. Materials shall be listed and labeled in accordance with Section 4.2.3 of Standard 90.1. Plans and specifications shall include verification and testing requirements per Section 4.2.5.1 of Standard 90.1. Plans and specifications shall include building *commissioning* requirements per Section 4.2.5.2 of Standard 90.1. The *building official* shall not require or expect physical copies of record drawings, manuals, functional performance test reports, or energy reporting unless specifically noted in this section. Section 5.4.3.1.4 of Standard 90.1 building leakage test report shall be submitted to the *building official* where applicable.

Plans shall indicate the total additional *efficiency* credits required by Section 11 of Standard 90.1. Core and shell buildings shall indicate the base number of credits and reduced number of credits when complying with Section 11.5.1(b) of Standard 90.1. Plans shall also indicate any exceptions specific to Section E301 that are used to comply with this code.

- Verification & Testing, and Commissioning - indicated on plans *only.* No physical copies
- Air Leakage report *shall* be submitted before "C of O"
- **NEW**: Additional Efficiency Credits *shall* be documented

2025 OEESC – Construction Documents

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

E104.2.1 Oregon Energy Compliance Form. *Construction documents* for new buildings shall include the Oregon Energy Compliance Form, including a ZERO Code 2.0 Calculator report (See ZERO-Code.org/energy-calculator/).

- Building official *may* waive CD and COMcheck requirements
- Oregon Energy Compliance Form & ZERO Code 2.0 Calculator report still required for *new* buildings

Compliance forms and resources

Energy compliance form

To demonstrate compliance with the commercial energy code, construction documents shall include the following where applicable:

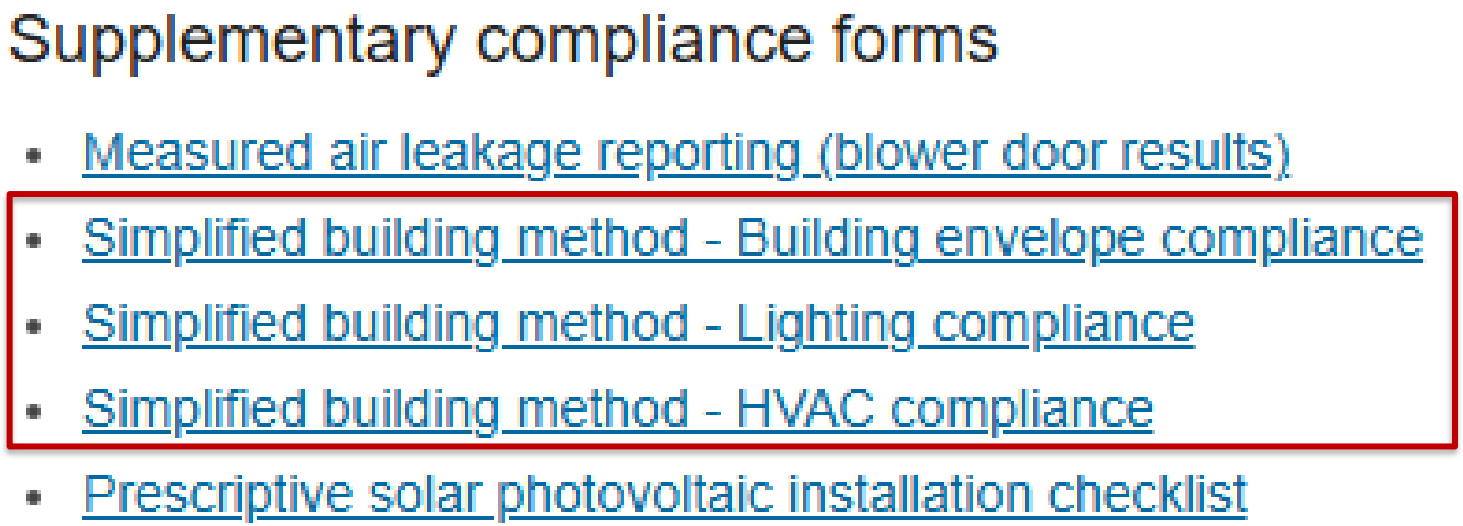
- Energy code compliance form instructions
- Energy code compliance form

Compliance resources

Use the following resources to complete the compliance form:

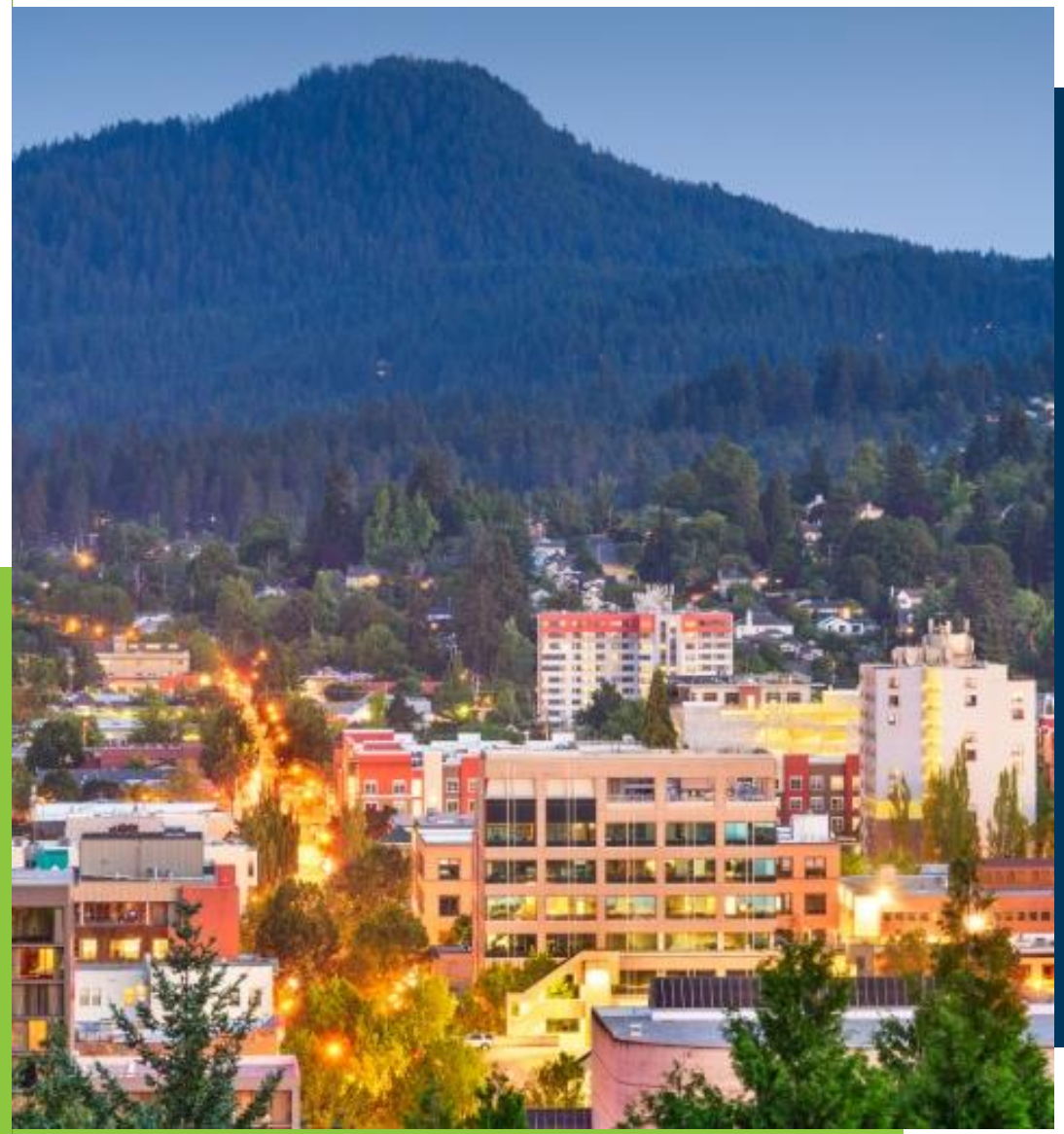
- Commercial compliance using COMcheck
- COMcheck
- ZERO energy calculator

Supplementary Compliance Forms



BCD developed "Simplified Building Method" Forms

- Buildings less than 25,000 sf *and*
- 2-stories or fewer, *and/or*
- Other requirements



2025 OEESC

What's new?

NEW: Additional Efficiency Credits (AEC's)

Major Change to ASHRAE 90.1-2022

Forthcoming Slide Overview

- What Are AEC's?
- Oregon's AEC Adjustment
- Documenting AEC's
- On-Site Renewable Energy & AEC's

AEC's are *NOT* Automatic – *MUST* be chosen by Owner and/or Design Team

NEW: Additional Efficiency Credits (AEC's)

AEC's - *What are they*?

- **Mandatory** requirement designed to increase the energy efficiency of ASHRAE through 33 component options
  - 25 energy efficiency measures
  - Seven load management measures
  - One renewable energy measure
- Each point = 0.1% increase in energy efficiency
  - 50 Points = 5% reduction in energy *cost*
  - COM*check* adjusts credit points when they work in conjunction

List of the Additional Efficiency Credits (AEC's)

Envelope
- E01: 11.5.2.1, "Improved Envelope Performance"

HVAC
- H02: 11.5.2.2.2, "HVAC Heating Performance Improvement"
- H03: 11.5.2.2.3, "HVAC Cooling Performance Improvement"
- H04: 11.5.2.2.4, "Residential Space HVAC Control"
- H05: 11.5.2.2.5, "Ground-Source Heat-Pump System"
- H06: 11.5.2.2.6, "Dedicated Outdoor Air System with Zone Fan Control"
- H07: 11.5.2.2.7, "Improved HVAC Sequence of Operations"

Water Heating
- W01: 11.5.2.3.1(a), "Heat Recovery for Service Hot-Water Preheating"
- W02: 11.5.2.3.1(b), "Heat-Pump Water Heater"
- W03: 11.5.2.3.1(c), "Efficient Gas Water Heater"
- W04: 11.5.2.3.2, "Service Hot-Water Piping Insulation Increase"
- W05: 11.5.2.3.3(a), "Point-of-Use Water Heater"
- W06: 11.5.2.3.3(b), "Thermostatic Balancing Valves"
- W07: 11.5.2.3.4, "Dwelling-Unit Service Hot-Water Submeters"
- W08: 11.5.2.3.5, "Right Sizing the Hot-Water Distribution System"
- W09: 11.5.2.3.6, "Shower Drain Heat Recovery"

Equipment Efficiency
- Q01: 11.5.2.7.1, "Efficient Elevator Equipment"
- Q02: 11.5.2.7.2, "Efficient Kitchen Equipment"
- Q03: 11.5.2.7.3, "Fault Detection and Diagnostics System"

Load Management
- G01: 11.5.2.8.1, "Lighting Load Management"
- G02: 11.5.2.8.2, "HVAC Load Management"
- G03: 11.5.2.8.3, "Automated Shading Load Management"
- G04: 11.5.2.8.4, "Electric Energy Storage"
- G05: 11.5.2.8.5, "HVAC Cooling Energy Storage"
- G06: 11.5.2.8.6, "Service Hot-Water Thermal Storage"
- G07: 11.5.2.8.7, "Building Thermal Mass

Lighting
- L02: 11.5.2.5.2, "Continuous Dimming and High-End Trim"
- L03: 11.5.2.5.3, "Occupancy Sensor Control Areas"
- L04: 11.5.2.5.4, "Increased Daylighting Control Area"
- L05: 11.5.2.5.5, "Lighting Control for Multifamily Buildings"
- L06: 11.5.2.5.6, "Reduce Interior Lighting Power"
- R01: 11.5.2.6, "On-Site Renewable Energy"

Power
- P01: 11.5.2.4, "Energy Monitoring"

2025 OEESC - *Adjusted* AEC Requirement

E301.7 Additional efficiency measures. The following modifications apply to the indicated subsection to Section 11 of Standard 90.1:

a. **Section 11.5.1 Energy Credits Required.** Projects shall achieve the total of credits, EC_{adj}, required in Table 11.5.1-1 as amended by Section E301.7(b) of this code ~~based on the *building* use type and climate zone~~. Projects with multiple *building* use types, *unconditioned* or *semiheated buildings*, parking garages, projects using *on-site renewable energy*, *alterations*, and *buildings* with separate shell-and-core and initial build-out *construction* permits shall comply as follows:

(*11.5.1(a), (b), (c), and (d) remain unchanged*)

Table 11.5.1-1 Energy Credit Requirements by Building Use Type (Adjusted)

Building Use Type [a]	Climate Zone	
	4C	5B
Multifamily [b]	32	41
Health care [c]	47	47
Hotel/motel	42	34
Office [d]	43	42
Restaurant [e]	49	49
Retail	38	36
Education [f]	41	39
Warehouse [g]	30	30
Other [h]	23	23

- Energy Credit Requirements – Table is adjusted *down* to account for *exclusion* of renewable energy provisions

"Office 43" - Used as example in following slides

2025 OEESC - Documenting AEC's

See COM*check* section of this presentation for more details

Adjusted Office AEC's in COM*check*

Solar Exception in COM*check*

COM*check* Software Version COMcheckWeb

Envelope Compliance Certificate

DRAFT

Project Information

Energy Code:	90.1 (2022) Standard
Project Title:	SAMPLE Small Office Salem OR
Location:	Salem, Oregon
Climate Zone:	4c

Efficiency Packages

Description	Credit
5% heating efficiency improvement	7.50
5% cooling efficiency improvement	8.57
Heat pump water heater	4.00
Reduced lighting power	18.00
HVAC Load Management	14.00

Credits: 43.0 Required 52.1 Proposed

Renewables

Why 52.1 proposed? OEESC exceptions

Renewables Passes: Building with more than 80% roof area covered by equipment

2025 OEESC - Documenting AEC's

Table 11.5.1-1 Energy Credit Requirements by Building Use Type (Adjusted)		
Adjusted Energy Credit Requirements per 2025 OEESC		
Documentation on CD's *might* look like this.	Building Type:	Office
	Climate Zone:	4C
	Sub-Total:	43
2025 OEESC Exceptions Utilized		
Exception to 8.4.2	Add:	5
Exception to 8.4.3.1 and 8.4.3.2	Add:	2
Exception to Section 10.4.7.1 and 10.4.7.2	Add:	0
	Sub-Total:	7
	Project Energy Credits REQUIRED Total:	**50**
	Project Energy Credits ACHIEVED per COMcheck:	**52.1**

2025 OEESC – On-Site Renewable Energy

c. Section 11.5.2.6 R01: On-Site Renewable Energy. To achieve this credit, the total minimum ratings of *on-site renewable energy systems* ~~in addition to the requirements of Section 10.5.1.1~~ shall be not less than 0.1 W/ft^2 of *gross floor area*. Additional *energy* credits shall be determined as follows:

$$EC_{R01\_adj} = EC_{R01\_base} \times \frac{RR_{total} - RR_{req}}{0.1 \times PGFA}$$

EC_{R01_adj} = *energy* credits achieved for *on-site renewable energy*

EC_{R01_base} = R01 base *energy* credit from Section 11.5.3

RR_{total} = actual total minimum rating of *on-site renewable energy systems*, W

RR_{req} = ~~minimum rating of *on-site renewable energy systems* required by Section 10.5.1.1 without exception~~ 0.50 W/ft^2 or 1.7 Btu/ft^2, multiplied by the sum of the gross conditioned floor area for all floors up to the three largest floors, W

PGFA = project *gross floor area*

Informative Note: *On-site renewable energy* may include thermal *service water heating* or *pool* water heating in which case ratings in Btu/h can be converted to W, where W = Btu/h/3.413.

- AEC's *are allowed* for On-Site Renewable Energy
- However, those are *limited to 60%* of the total required AEC's.
- See next slide for calculation example.

2025 OEESC – On-Site Renewable Energy

11.5.2.6 R01: On-Site Renewable Energy Calculation

$$EC_{R01\_adj} = EC_{R01\_base} \times \frac{RR_{total} - RR_{req}}{0.1 \times PGFA}$$

PGFA	10,000	SF	*Office Building*			
Stories	2					
SF Roof	5,000	x	70%	% of Roof		
	SF Available		Ave. W/SF		W Potential	
=	3,500	x	17.25	=	60,375	

Table 11.5.3-4 Energy Credits for Office Buildings

ID	Energy Credit Abbreviated Title	Section	Climate Zone											
			0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B
R01	On-Site Renewable Energy	11.5.2.6	11	11	14	13	14	16	15	18	19	13	18	14	11	16

	11.25%	of W Potential				
ECR01_base	6,792	-	5,000		ECR01_adj	
14	x		=		25.1	
	0.1	x	10,000			
	Required AEC's		Limit		AEC Limit	
Office [d] 43	43		60%		25.8	

Amount of solar is ***not*** *limited*, only AEC's *relating to solar* are limited (60% of required AEC's)

2-Story, 10,000 SF Office Building

Roof area available = 70%

Potential production @ 17.25 W/SF = 60,375 W

On-Site Renewable Base AEC's = 14

11.25% of *Potential* planned

Maximum renewable AEC's = 25.8

***Adj.* renewable AEC's = 25.1**
(*Allowable* - Less than 25.8)

2025 OEESC – Building Envelope

5.1.6.3 *Spaces* shall be assumed to be *conditioned spaces* and shall comply with the requirements for *conditioned spaces* at the time of *construction*, regardless of whether mechanical or electrical *equipment* is included in the *building* permit application or installed at that time.

Exception to 5.1.6.3: A *space* may be designated as either a *semiheated space* or an *unconditioned space* only if approved by the *building official*.

Oregon Amendment:

2. A space with a limited *radiant heating system* meeting the requirements of Section 6.5.8.3 (E301.3(e)) shall be considered an *unconditioned space*.

5.4.3.4 Vestibules and Revolving Doors. Vestibules and revolving *doors* shall be installed in accordance with this section.

Oregon Amendment:

b. Exceptions to 5.4.3.4

11. Buildings less than 25,000 ft^2 in gross *conditioned floor area* with an *air leakage* rate not exceeding 0.30 cfm/ft^2 and meeting the testing requirements of Section 5.4.3.1.4.

2025 OEESC - Ventilation Standards

E301.1.1 References to ASHRAE Standards 62.1 and 62.2. The *Mechanical Code* sets ventilation standards for this code and the *Building Code*, with allowance for other methods. Unless otherwise modified by this code, any reference to ASHRAE Standards 62.1 and 62.2 in Standard 90.1 shall mean the *Mechanical Code*, or other *approved* ventilation standard.

c. Section 6.5.3.9 (c)

c. Where ASHRAE Standard 62.1 is used for ventilation design, all airflow supplied to the zone shall be shut off whenever the *space* temperature is between the active heating and cooling *set points*.

- This section *ONLY* applies if the designer utilizes Standard 62.1, for their Outdoor Air Design. Does *NOT* apply under OMSC Section 403

2025 OEESC – Parking Garage Ventilation

E301.3 Heating, ventilating, and air conditioning. The following modifications apply to the indicated subsections to Section 6 of Standard 90.1:

a. **Section 6.4.3.4.5 Parking Garage Ventilation Systems.** Parking garage *ventilation systems* shall meet Section 404 of the *Mechanical Code* and all of the following:

   a. Separate *ventilation systems* and control *systems* shall be provided for each *parking garage section*.

   b. Control systems for each *parking garage section* shall *automatically* detect and control contaminant levels and shall be capable of and configured to reduce airflow to 20% or less of *design capacity* in accordance with Section 404 of the *Mechanical Code*.

   c. The *ventilation system* for each *parking garage section* shall have controls and devices that result in fan motor *demand* of no more than 30% of design wattage at 50% of the design airflow.

   Exception to 6.4.3.4.5: Garage *ventilation systems* serving a single *parking garage section* having a total *ventilation system motor nameplate horsepower* not exceeding 5 hp at *fan system design conditions* ~~and where the *parking garage section* has no *mechanical cooling* or *mechanical heating*~~.

- Oregon code triggers ventilation controls, including unconditioned garages
- For consistent application, reference to the OMSC Section 404 is made here

2025 OEESC – Packaged HVAC Equipment

b. **Section 6.4.3.5.1 Packaged HVAC Equipment with Electric Heat.** HVAC *equipment* for new *buildings* with a cooling capacity less than 241,000 Btu/h from Table 6.8.1-1 shall not have electric supplemental heat exceeding 21,500 Btu/h (6 kW). *Equipment* with *electric resistance* heating exceeding 21,500 Btu/h (6 kW) and cooling capacity less than 241,000 Btu/h shall have heat pump operation for the first stage of heating and shall be selected from Table 6.8.1-2.

- Packaged HVAC units up to 20 Tons *and* over 6 kW with electric resistance heat *shall* have heat pump operation for 1st stage

2025 OEESC - Nontransient DU Ventilation

d. Section 6.5.6.1.1 Nontransient Dwelling Units. Individual *nontransient dwelling units* with the required continuous ventilation rate exceeding 60 cfm shall be provided with *outdoor air energy* recovery *ventilation systems*. ~~For *nontransient dwelling units*, *energy* recovery *systems* shall result in an *enthalpy recovery ratio* of at least 50% at the cooling design condition.~~ *Ventilation systems* serving multiple *nontransient dwelling units* shall comply with 6.5.6.1.2.

(The rest of Section 6.5.6.1.1 remains unchanged)

- Non-transient dwellings trigger energy recovery *if over 60 CFM* for a single dwelling or systems serving multiple units
- For 2025 OMSC, will trigger for DU's at *approximately* 1,250 SF, 2-bedroom units and larger

2025 OEESC - Door Switches

6.5.10 Door Switches. Any *conditioned space* with a *door*, including *doors* with more than one-half glass, opening to the outdoors shall be provided with controls that, when any such *door* is open,

a. disable *mechanical heating* or *reset* the heating *set point* to 55°F or lower within five minutes of the *door* opening and
b. disable *mechanical cooling* or *reset* the cooling *set point* to 90°F or greater within five minutes of the *door* opening. *Mechanical cooling* may remain enabled if *outdoor air* temperature is below *space* temperature.

Exceptions to 6.5.10:

1. *Building* entries with *automatic* closing devices.
2. Any *space* without a *thermostat*.
3. *Alterations* to *existing buildings*.
4. Loading docks.

f. Exceptions to 6.5.10:

(*Exceptions 1 through 4 remain unchanged*)

5. Residential *dwelling units* in *buildings* three stories and less.
6. Normally locked doors not used as a *building* entry where *approved*.

Oregon Amendment

2025 OEESC – Data Centers

data center: a computer room (or series of computer rooms that share *data center systems*) serving a total ITE load greater than 100 kW and 20 W/ft^2 (215 W/m^2) of conditioned floor area.

Errata-March 4, 2025: In the first publishing of this code, Section 6.6 of Standard 90.1 was erroneously noted as not adopted and Section 6.6.1 was erroneously amended. The following errata aligns with the intent approved through the code adoption process.

- OEESC E301.3(g) Section 6.5.12 is adopted
- ASHRAE 90.1 Section 6.6 is adopted as part of this code
- ASHRAE 90.1 Section 6.6.1 is not adopted as part of this code

g. **Section 6.5.12 Data Center Rooms Systems.** The following requirements are mandatory for *data centers* and optional for a *computer room* with IT *equipment* load greater than 10 kW. *HVAC systems* that only serve the heating, cooling, or ventilating needs of a *data center* or a *computer room* ~~*kW*~~ shall comply with ASHRAE Standard 90.4, *Energy Standard for Data Centers*. All other *HVAC systems* shall comply with the applicable requirements in Section 6.5.

h. **6.6.1 Computer Rooms Systems Path.** Not adopted

- Differs from model code with trigger at higher capacity.
  - ✓ 100 kW v 10 kW
- Better aligns with cooling (likely exceeding 20-tons of cooling) and power loads

2025 OEESC – Power in Data Centers

E301.4 Power. The following modifications apply to the indicated subsection to Section 8 of Standard 90.1:

a. **Exception to 8.2.1**

Power distribution *systems* and *equipment* only serving a *data center* ~~computer room with IT equipment load greater than 10 kW~~ shall ~~be permitted to~~ comply with Section 8.6, "Data Center Room Systems." ~~"Alternative Compliance Path."~~

f. **Section 8.6.1 ~~Computer~~ Data Center Room Systems.** Power *distribution systems* and *equipment* ~~only~~ serving a ~~*computer room*~~ *data center* ~~with IT *equipment* load greater than 10 kW~~ shall comply with ASHRAE Standard 90.4, *Energy Standard for Data Centers.*

- Standard 90.4 is for mechanical and *power* delivery efficiency
- Amendments align with Section 6.6 (previous slide)

2025 OEESC – Receptacles & Monitoring

Oregon Amendments

c. Exceptions to 8.4.2

Receptacles for the following shall not require an *automatic control device*:

1. Receptacles specifically designated for *equipment* requiring continuous operation (24/day, 365 days/year).
2. *Spaces* where an *automatic control* would endanger the safety or security of the room or *building* occupants.
3. The *building* achieves five additional *efficiency* credits above the minimum credits required in accordance with Section 11.5.

d. Exceptions to 8.4.3.1 and 8.4.3.2

(*Exceptions 1 through 5 remain unchanged*)

6. The building achieves two additional *efficiency* credits above the minimum credits required in accordance with Section 11.5.

- 8.4.2 Automatic Receptacle Control
- 8.4.3 Electrical Energy Monitoring
- Added exceptions which require documented *additional efficiency credits* to be added to the minimum credits required

2025 OEESC – Voltage & Compressed Air

b. **Section 8.4.1 Voltage Drop.** Not adopted

a. **Section 10.4.6 Compressed Air Systems.** Not adopted.

Boards and their associated installation codes override ASHRAE

- Sizing of voltage drop is Electrical & Elevator (OESC) authority
- Compressed air systems are Boiler & Pressure Vessel (OBPVSC) authority

2025 OEESC - Lighting

E301.5 Lighting. The following modifications apply to the indicated subsection to Section 9 of Standard 90.1:

a. **Section 9.1.1.3** is replaced in its entirety with the following:

9.1.1.3 Alterations to Existing Systems and Equipment. The *alteration* of *lighting equipment* and *systems* in an interior *space* shall comply with Section 9.1.1.3.1. The *alteration* of a *lighting system* in an exterior application shall comply with Section 9.1.1.3.2.

The maintenance of an existing *lighting system* to return it to working order shall not be considered an *alteration*. Retrofitting a *luminaire* for which the original *lamps* and *ballast/driver* are replaced with a new *lamp/light source* and *driver/ballast* that was not a component of the original *luminaire* shall be considered an *alteration* of the *luminaire*, but not a *lighting system alteration*.

- 90.1 Alteration language difficult to enforce
- Would have triggered re-wiring, re-switching, etc. for minimal revisions
- *New* spaces still to have switching, etc.

2025 OEESC – Lighting (Con't)

9.1.1.3.1 Alterations for Interior Building Spaces. The *alteration* of a *lighting system* in an interior *space* shall meet one of the following requirements, as applicable:

a. *Alterations* shall not increase the total wattage of a *lighting system.*

Exception to 9.1.1.3.1(a): The total wattage of the altered *lighting system* within an altered *space* shall comply with the LPA as applicable to the altered *space* as shown in Tables 9.5.2.1-1 and 9.5.2.1-2 and Section 9.5.2.2.

b. *Alterations* that create a new *space* shall comply with Section 9.2.

c. *Alterations* to *lighting system* controls in a *space* shall comply with the control requirements of Section 9.4.1.1 as applicable to each altered *space* and shown in Tables 9.5.2.1-1 and 9.5.2.1-2, and Section 9.5.2.2.

9.1.1.3.2 Lighting Alterations for Exterior Building Areas. The *alteration* of a *lighting system* and luminaires for an exterior area shall comply with the following requirements, as applicable:

a. *Alterations* shall not increase the total wattage of a *lighting system.*

Exception to 9.1.1.3.2(a): the altered exterior area shall comply with the area-specific allowances in Table 9.4.2-2 and shall not use the base *site* allowances to determine the *LPA.*

b. New and replacement fixtures for an existing *lighting system* shall be provided with no less than the controls of the existing *lighting system.*

- Alterations of *existing* spaces shall not increase the total wattage of a lighting system. *New* spaces shall comply with 9.2

2025 OEESC – Lighting (Con't)

- 100% of fixtures in Dwelling Units *must* be high efficacy
- Clarifies that include the Dwelling Unit floor area is excluded from the building area calculation

b. Section 9.4.3.1 Lamp and Luminaire Efficacy. ~~At least 75%~~ 100% of the permanently installed *luminaires* shall use lamps with an efficacy of at least 75 lm/W or have a total luminaire efficacy of at least 50 lm/W. *Dwelling unit* floor area shall be excluded from total building floor area under the Building Area Compliance Method (9.5.1).

2025 OEESC – Whole-Building Energy Monitoring

Oregon Amendment:

b. Exceptions to 10.4.7.1 and 10.4.7.2

(*Exceptions 1 through 5 remain unchanged*)

6. *Buildings* achieving two additional *efficiency* credits above the minimum *energy* credits required in accordance with Section 11.5.

The additional *efficiency* credits used to comply with this exception may be used to comply with Exception 6 to Sections 8.4.3.1 and 8.4.3.2.

- 10.4.7 Whole-Building Energy Monitoring
  - Added exceptions which require documented *additional efficiency credits* to be added to the minimum credits required
  - These two credits may be used *in combination* with taking 8.4.3 Electrical Energy Monitoring exception

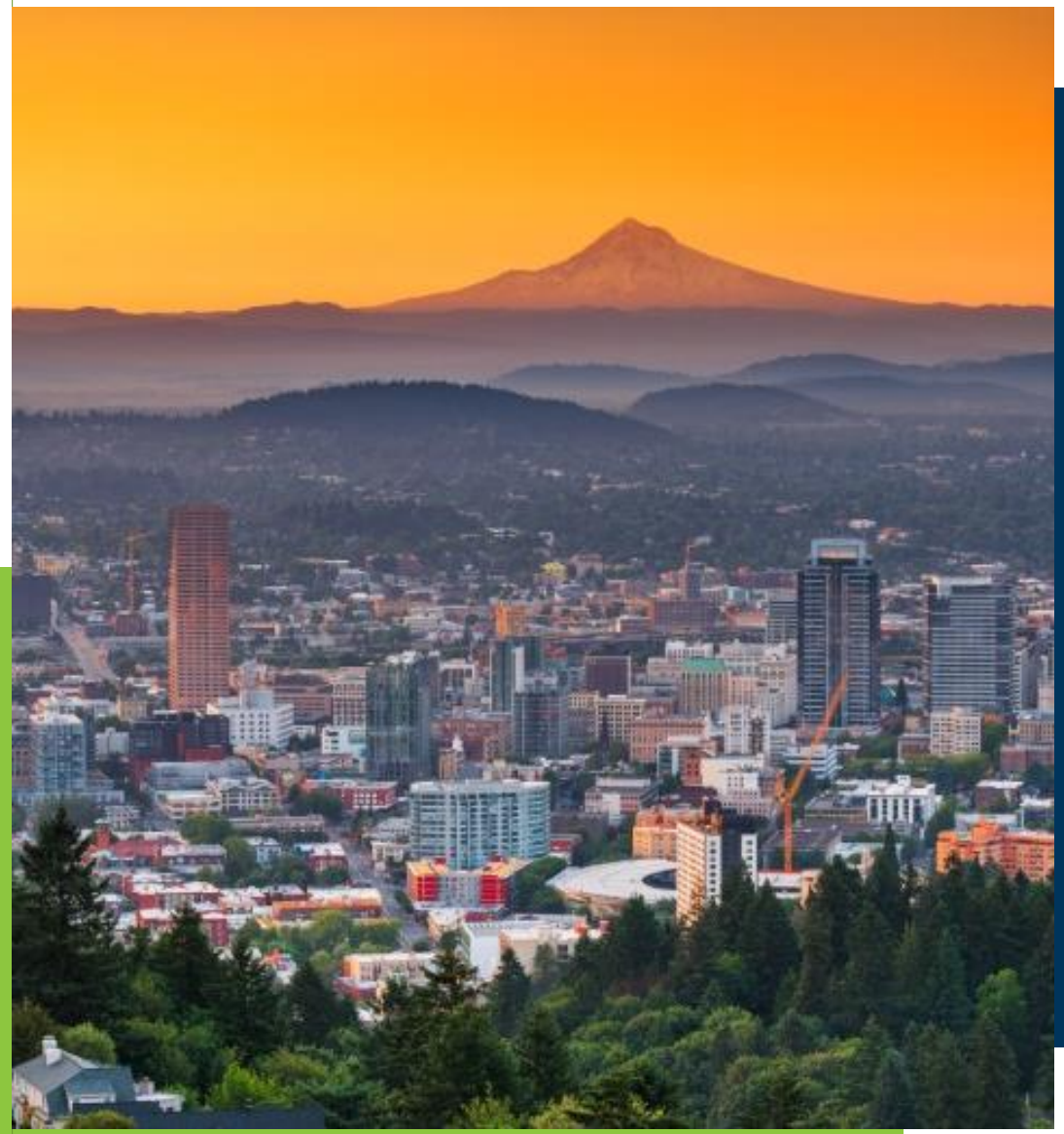
2025 OEESC – Renewable Energy

c. **Section 10.5.1 Renewable Energy Resources.** Not adopted

d. **Section 10.5.1.1 On-site Renewable Energy.** Not adopted.

ORS 455.496 - Proposed state building code standards relate to the *energy use* and *energy efficiency* aspects of the specialty codes. The proposed standards evaluated may include, but need not be limited to, standards regarding *energy-conserving* technology, construction methods, products and materials

Adoption of energy production (i.e. renewable energy) provisions within ASHRAE are not adopted



ASHRAE 90.1-2022

What's new?

Summary of Changes

More than 80 Addenda. Listed in Foreword to ASHRAE 90.1-2022

General

- *The scope of the standard has been expanded to include sites as well as buildings, enabling regulation of energy use associated with the building but not in the building itself, such as exterior or parking lot lighting not connected to the building electric service. This also allows for equipment, such as photovoltaic (PV) equipment, located on site but not within the building.*
- *A new energy credits requirement (new Section 11) has been added that enables approximately 4% to 5% cost-effective energy savings through 33 different energy-saving measures. The number of required credits varies by building type and climate zone.*
- *A minimum prescriptive requirement for on-site renewable energy has been added. This requirement includes exceptions for small buildings, buildings with limited roof space, and other situations where PV installations would be problematic.*
- *It should be noted that, due to the addition of a new section and several appendices, the number or letter designations of several well-known sections and appendices have changed from those used in the 2019 and previous editions of the standard.*

Administration and Enforcement

- *There were no major changes to administration and enforcement.*

Building Envelope

- *A requirement was added to perform whole-building air-leakage testing and measurement on buildings less than 25,000 ft^2.*
- *Requirements were added that address the impacts of thermal bridges in building envelopes, with a new Informative Appendix K providing supplemental information on application.*
- *A solar reflectance requirement for walls was added for Climate Zone 0. This is similar to the requirements for high albedo roofs.*
- *Specific provisions were added to distinguish roof replacements from other types of alterations.*
- *A new reference was added for steel-framed walls to allow use of ANSI/AISI S250 for U-factor determination.*
- *Added a definition for insulated metal panels (IMPs).*
- *Normative Appendix A was reformatted to clarify the requirements for thermal performance calculations.*

Mechanical

- *Introduced an optional Mechanical System Performance Path that allows HVAC system efficiency trade-offs based on a new metric, total system performance ratio (TSPR).*
- *Required condensing boilers for new construction in order to achieve 90% or greater efficiency for large boilers (1 to 10 million Btuh. The thermal efficiency requirements for high-capacity gas-fired service water-heating equipment were also increased.*
- *Established a minimum enthalpy recovery ratio for energy recovery systems and specified operational requirements to ensure proper economized performance.*
- *Revised demand control ventilation requirements to be based on climate zone and Standard 62.1 airflow requirements.*
- *Modified the minimum efficiency requirements for air-source heat pumps and introduced a new metric, COP_{HR}, for units that perform heat recovery during chiller operation.*
- *Added the minimum energy efficiency requirements (and new CFEI metric) for large-diameter ceiling fans from 10 CFR 430.*

Lighting and Power

- *Reorganized Section 9, "Lighting," to be more consistent with the structure of other main sections of the standard.*
- *Updated installed interior lighting power allowances and minimum control requirements; added a power exception for the germicidal function in luminaires and sources; and removed exceptions for casinos and parking garage daylight transition zone lighting.*
- *Modified a number of lighting requirements to reflect greater use of higher efficiency LED products and revised lighting practices.*
- *Added requirements for indoor horticultural lighting in greenhouses and indoor grow buildings based on a new metric, photosynthetic photon efficacy (PPE), developed in ANSI/ASABE S640.*
- *Provided an additional interior lighting power allowance for video conferencing. Power allowances and controls have been moved to a table for ease of reference.*

Significant Changes

- **NEW** Section 11 – Additional Efficiency Credits (AEC's)
- 5.4.3 - Air Leakage
- **NEW** 5.5.5 – Thermal Bridging
- 6.4.3.3 - Off-Hours Controls Exceptions
- 6.4.3.3.5.3 & 9.4.1.3 - Hotel Guest Room Controls
- 6.4.3.4.5 - Garage Ventilation Systems

Significant Changes

- 6.4.3.8 - Demand Control Ventilation (DCV)
- 6.5.1 - Economizers
- 6.5.3.7 - Small Ventilation Fan Efficiency
- **NEW** 6.6.2 – NEW Mechanical System Performance Path (Total System Performance Ratio (TSPR))
- 10.5.1 - Renewable Energy Resources (On-Site Renewable Energy) – NOT ADOPTED

Other Changes

5.1.3.1, 5.5.3.1	**Roof Replacement Insulation**. Clarification for when full-depth insulation would not be required due to site conditions. **Fiscal impact:** *None.*
6.4.3.4.1	**Stair and Elevator Shaft Dampers.** Clarification of operation of vent openings in shafts. **Fiscal impact:** *None.*
6.5.4.8	**Gas Boiler Systems**. Requirement for high-capacity space heating boilers (1-10 MMBtu, similar to SWH systems) to have a minimum thermal efficiency (E_t) of $\geq$ 90%.
6.8.1 Efficiency Tables	**Expansion of tables.** New product types covered. Tables combined, added and deleted to align with latest federal regulations. Efficiency for specialty equipment clearly delineated, eliminating confusion from previous editions. **Fiscal impact:** *None.*
7.4.3; 6.3.8	**Pipe Insulation:** *New table for potable water system pipe insulation created in the Section 7, Plumbing. No change in requirements.* **Fiscal impact:** *None.*

Other Changes

9.3	**Simplified building compliance.** Reduced lighting allowances to align with lighting allowance reductions under prescriptive path. Aligns with HVAC simplified path. **Fiscal impact:** *None.*
9.4.1.1	**Daylight control.** Trigger for daylight control zones has reduced by half: now 75 W of connected fixtures vs. 150 W in the primary daylight zone. 150 W vs. 300 W in the secondary zone. **Fiscal impact:** *Limited. Some daylight zones in some buildings will require controls where not previously required; dependent on efficiency of fixtures. Due to LPA reductions, change similar to primary daylight zones that would have required control under 2014 OEESC.*
9.4.4	**Horticulture Lighting.** Sets minimum efficiency for fixtures/bulbs used for horticulture in regulated structures. Does not apply to ag-exempt structures. **Fiscal impact:** *Limited. Likely to be standard practice as the efficiency and life-expectancy of fixtures and bulbs economics are driving industry to these fixtures.*
Tables 9.5.1 & 9.6.1	**Lighting power allowance:** Lowered power allowances for many building types (Building Area) and Space Types (Space-by-Space method). Updated to align with current LED lighting efficiencies. **Fiscal impact:** *Possible savings via reduction in number of fixtures required.*
10.4.3	**Elevators.** Improvements to elevator fan, lighting, and movement efficiencies.

Section 11 – Additional Efficiency Credits (AEC's)

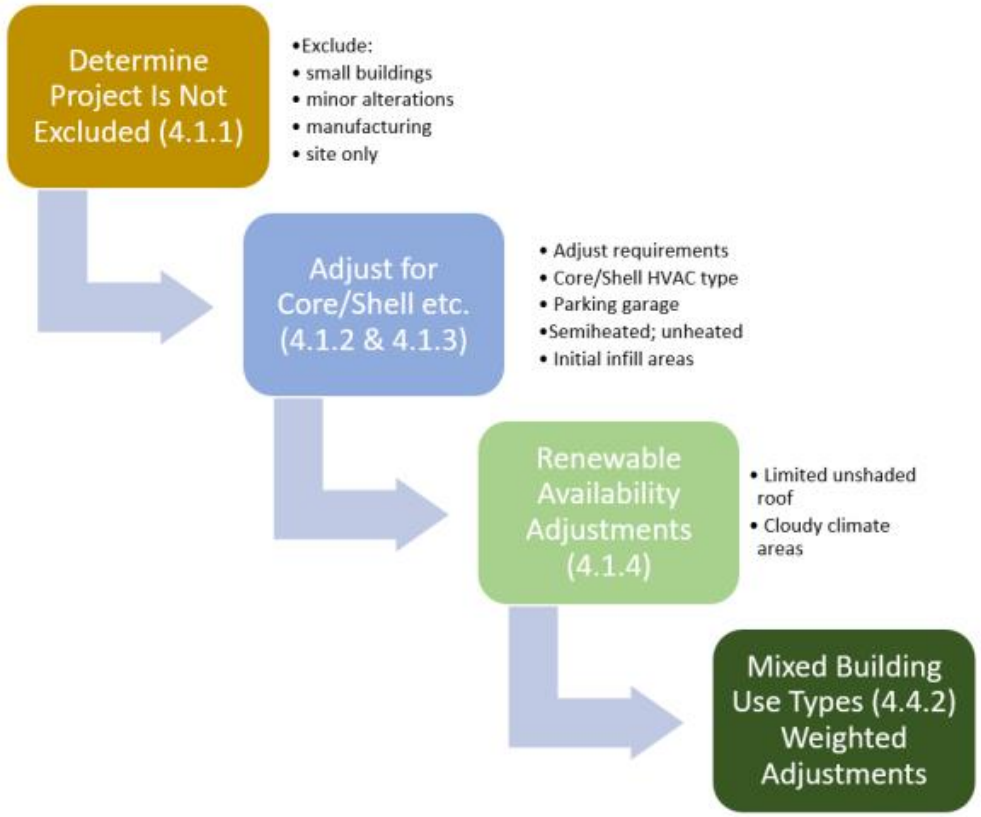
Pacific Northwest
NATIONAL LABORATORY

PNNL-34217

Energy Credits Application Guide: ASHRAE Standard 90.1-2022

July 2023

R Hart
D Maddox
M Tillou
M Rosenberg



Resource Link:

https://www.energycodes.gov/sites/default/files/2023-07/901_Energy_Credits_Application_Guide_Final_07162023.pdf

Section 11 – Additional Efficiency Credits (AEC's)

- Requires **additional efficiency** measures, but provides flexibility
- Applies to:
  - **New construction** greater than 2,000 ft^2
  - **Additions** greater than 2,000 ft^2
  - **Alterations** to buildings greater than 5,000 ft^2 where the alterations includes replacement of *two or more* of:
    - HVAC systems that account for more than 50% of heating or cooling capacity of the alteration area
    - 50% or more of the luminaires in the alteration area
    - 25% or more of the building envelope area of the alteration portion
  - **Initial build-outs** greater than 1,000 ft^2

Section 11 – Additional Efficiency Credits (AEC's)

- **Credit based** – Each credit represents approximately *0.1% energy cost savings*
- **Number of credits** required depends on
  - Climate zone
  - New construction vs. addition vs. alteration
  - Building type – 8 types, plus "other"
    - Multiple building use types = Weighted average
- **2025 OEESC** - *Revises number of credits required*

Example: Credit Table for Offices

Table 11.5.3-4 Energy Credits for Office Buildings

ID	Energy Credit Abbreviated Title	Section	Climate Zone																	
			0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
E01	Improved Envelope Performance	11.5.2.1	Determined in accordance with Section 11.5.2.1																		
H02	Heating Efficiency	11.5.2.2.2	×	×	×	×	×	×	1	×	×	2	1	2	5	3	2	7	5	7	10
H03	Cooling Efficiency	11.5.2.2.3	18	18	15	16	12	10	8	8	7	6	5	3	4	4	2	4	2	3	1
H04	Residential HVAC Controls	11.5.2.2.4	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
H05	Ground-Source Heat Pump	11.5.2.2.5	9	8	5	8	5	4	7	5	2	10	6	7	15	10	8	21	15	19	20
H06	DOAS/Fan Controls	11.5.2.2.6	19	19	17	18	16	16	11	14	12	9	13	8	5	10	7	3	6	3	×
H07	Guideline 36 Sequences	11.5.2.2.7	3	3	3	3	3	3	2	2	2	2	2	1	2	2	1	2	2	2	2
W01	SHW Preheat Recovery	11.5.2.3.1(a)	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
W02	Heat-Pump Water Heater	11.5.2.3.1(b)	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
W03	Efficient Gas Water Heater	11.5.2.3.1(c)	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3
W04	SWH Pipe Insulation	11.5.2.3.2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1
W05	Point-of-Use Water Heaters	11.5.2.3.3(a)	×	4	4	4	4	4	4	3	3	3	2	3	2	1	2	1	1	1	×
W06	Thermostatic Balancing Valves	11.5.2.3.3(b)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
W07	SHW Submeters	11.5.2.3.4	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
W08	SHW Distribution Sizing	11.5.2.3.5	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
W09	Shower Drain Heat Recovery	11.5.2.3.6	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
P01	Energy Monitoring	11.5.2.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
L02	Lighting Dimming and Tuning	11.5.2.5.2	5	5	6	6	6	6	6	7	7	6	7	7	6	6	7	5	6	5	5

5.4.3 Air Leakage

Buildings 10k SF or larger may utilize *either* Measured Air Leakage or Third-Party Verification & Testing

5.4.3.1 Whole-Building Air Leakage

5.4.3.1.1 New *buildings* less than 10,000 ft^2 of *gross conditioned floor area* shall comply with measured *air leakage* requirements in Section 5.4.3.1.4.

5.4.3.1.2 New *buildings* not less than 10,000 ft^2 of *gross conditioned floor area* shall comply with one of the following:

a. Measured *air leakage* requirements in Section 5.4.3.1.4
b. A *continuous air barrier* design and installation verification program performed in accordance with Section 5.9.1.2

5.4.3.1.3 In *alterations* and *additions* to an *existing building* where portions of the *continuous air barrier* are impacted, those portions shall be installed or reinstalled and comply with one of the following:

a. Measured *air leakage* requirements in Section 5.4.3.1.4
b. A *continuous air barrier* design and installation verification program performed in accordance with Section 5.9.1.2

5.4.3.1.4 Measured Air Leakage

5.4.3.1.4 Measured Air Leakage. Where measured *air leakage* is used for compliance, the rate of *air leakage* of the *building envelope* shall not exceed 0.35 cfm/ft^2 under a pressure differential of 75 Pa (0.30 in. of water), with this *air leakage* rate normalized by the sum of the above-*grade* and below-*grade building envelope* areas of the *conditioned space* and *semiheated space* and in accordance with this section.

a. Whole-*building* pressurization testing shall be conducted in accordance with ASTM E3158. For *buildings* less than 10,000 ft^2 of *gross conditioned floor area*, and that contain no more than one *single-zone system*, *air leakage* testing may be conducted in accordance with ASTM E779, ASTM E1827, or ASTM E3158. Testing shall be conducted excluding HVAC related elements and be performed by an independent third-party *verification and testing provider* in accordance with Section 4.2.5.1.

c. Where the measured *air leakage* rate exceeds 0.35 cfm/ft^2 but does not exceed 0.45 cfm/ft^2, a diagnostic evaluation, such as a smoke tracer or infrared imaging, shall be conducted while the *building* is pressurized, and any leaks noted shall be sealed if such sealing can be made without destruction of *existing building* components. In addition, a visual inspection of the air barrier shall be conducted, and any leaks noted shall be sealed if such sealing can be made without destruction of *existing building* components.

d. Where the measured *air leakage* rate exceeds 0.45 cfm/ft^2, corrective actions must be made to the *envelope* and an additional test completed where results are 0.45 cfm/ft^2 or less in order to demonstrate compliance.

e. Reporting shall be in compliance with Section 4.2.5.1.2.

5.9.1.2 Verification & Testing

5.9.1.2 Verification of the Design and Installation of the Continuous Air Barrier. Where verification of the design and installation of the *continuous air barrier* is used for compliance in Section 5.4.3.1, it shall be determined in accordance with the following:

a. Requirements for a field inspection plan shall be included in the *construction documents* and shall include as a minimum the following:
   1. Schedule for periodic inspection(s)
   2. *Continuous air barrier* scope of work
   3. List of critical inspection items
   4. Inspection document requirements
   5. Provisions for corrective actions when needed

b. An independent third-party *V&T provider* in accordance with Section 4.2.5.1 shall conduct reviews and inspections as follows:
   1. A design review shall be conducted to verify and document compliance with the requirements in Sections 5.4.3 and 5.8.3.2.
   2. Periodic field inspection of the *continuous air barrier* materials and assemblies shall be conducted during *construction* while the *continuous air barrier* is still accessible for inspection and *repair* to verify and document compliance with the requirements of Section 5.4.3.2 and 5.8.3 and the field inspection plan.
   3. Verification and *FPT* documentation shall comply with Section 4.2.5.1.2 and the field inspection plan.

5.5.5 Thermal Bridging

NEW Section in ASHRAE 90.1

5.5.5 Linear Thermal Bridges and Point Thermal Bridges. Where *linear thermal bridges* and *point thermal bridges* occur as described in Sections 5.5.5.1 through 5.5.5.5, they shall

a. comply with the applicable requirements of Sections 5.5.5.1 through 5.5.5.5 or
b. not exceed the mitigated *psi-factors* and *chi-factors* in Table A10.1, where the *psi-factors* and *chi-factors* for the *thermal bridges* are determined in accordance with Normative Appendix A, Section A10.

For the purposes of Section 5.5.5, linear elements that are connected to the *building* structure by a series of point connections shall be permitted to be characterized as *linear thermal bridges* or as individual *point thermal bridges*.

Exceptions to 5.5.5:

1. *Buildings* located in Climate Zones 0 through 3.
2. *Semiheated spaces* in *buildings* located in Climate Zones 0 through 6.
3. *Clear-field thermal bridges*.
4. *Thermal bridges* in uninsulated assemblies.
5. *Linear and point thermal bridges* that have a material thermal conductivity less than 3.0 Btu·in/h·ft^2·°F.
6. *Alterations* to *existing buildings* other than *additions*.
7. *Roofs* that project over *exterior walls*.

Add'l Training Coming Soon

6.4.3.3 Off Hours Controls

90.1-2019

6.4.3.3 Off-Hour Controls

HVAC systems shall have the off-hour *controls* required by Sections 6.4.3.3.1 through 6.4.3.3.5.

Exceptions to 6.4.3.3

1. *HVAC systems* intended to operate continuously.
2. *HVAC systems* having a design heating capacity and cooling capacity less than 15,000 Btu/h that are equipped with *readily accessible manual* on/off *controls*.

90.1-2022

6.4.3.3 Off-Hour Controls. *HVAC systems* shall have the off-hour controls required by Sections 6.4.3.3.1 through 6.4.3.3.5.

Exceptions to 6.4.3.3:

1. *HVAC systems* intended to operate continuously.
2. *HVAC systems* not serving *residential spaces* and having a design heating capacity and cooling capacity less than 7000 Btu/h that are equipped with *readily accessible manual* on/off controls.

6.4.3.3.5.3 - Hotel Guest Room Controls

6.4.3.3.5 Automatic Control of HVAC in Hotel/Motel Guest Rooms. Hotels and motels with greater than 50 guest rooms shall be provided with *automatic* controls for the HVAC *equipment* serving each guest room capable of and configured according to the requirements in the following subsections.

6.4.3.3.5.1 Guest Room HVAC Set-Point Control. HVAC *systems* serving hotel guest rooms shall be capable of and configured with three modes of temperature control.

Exceptions to 6.4.3.3.5.1:

1. A *networked guest room control system* shall be permitted to return the *thermostat set points* to their default occupied *set points* 60 minutes prior to the time the room is scheduled to be occupied.
2. Dehumidification shall be permitted to limit the *space* humidity levels as required by Standard 62.1 during unoccupied mode for both rented and unrented periods.

6.4.3.3.5.2 Guest Room Ventilation Control. Within 20 minutes of all occupants leaving the guest room, *ventilation* and exhaust fans shall *automatically* be turned off, or *isolation devices* serving each guest room shall *automatically* shut off the supply of *outdoor air* to the guest room and shut off exhaust air from the guest room.

Exception to 6.4.3.3.5.2: Guest room *ventilation systems* shall be permitted to have an *automatic* daily preoccupancy purge cycle that provides daily *outdoor air ventilation* during unrented periods at the design *ventilation* rate for 60 minutes, or at a rate and duration equivalent to one air change.

Removed from 90.1-2022:

6.4.3.3.5.3 Automatic Control

Card key card controls shall be permitted to be used to indicate occupancy.

9.4.1.3 - Hotel Guest Room Controls

9.4.1.3 Special Applications. Lighting controls noted in this section are the only required controls for this *equipment* and these applications. Lighting exempt from interior lighting power shall be controlled in accordance with Table 9.2.2.1. Lighting using additional interior lighting power applications shall be controlled in accordance with Section 9.5.2.2.

a. Lighting used for the following applications shall be equipped with a local control independent of the control of the *general lighting* in accordance with Section 9.4.1.1(a). In addition, such lighting shall be controlled in accordance with Section 9.4.1.1(h) or Section 9.4.1.1(i).
   1. Display or accent lighting
   2. Lighting in display cases

b. Guestrooms
   1. All lighting and switched receptacles in guestrooms and suites in hotels, motels, boarding houses, or similar *buildings* shall be *automatically* controlled such that the power to the lighting and switched receptacles in each *enclosed space* will be turned off within 20 minutes after all occupants leave that *space*. Card key controls shall not be used to comply with this provision.
   2. Bathrooms shall have a separate *control device* installed to *automatically* turn off the bathroom lighting within 30 minutes after all occupants have left the bathroom.

      Exception to 9.4.1.3(b)(2): Night lighting of up to 5 W per bathroom is exempt.

Removed from 90.1-2022:

Exception to 9.4.1.3(b)(1)

Enclosed spaces where the lighting and switched receptacles are controlled by card key *controls* and bathrooms are exempt.

6.4.3.4.5 - Garage Ventilation Systems

- Remember, 2024 OEESC adds *Section 404 of the Mechanical Code*.
- Garages with separate sections separated by solid walls that restrict airflow between sections *must* have separate exhaust systems and controls.
- Trigger for requiring ventilation controls is based on HP of the fan (*over 5 HP*); no longer based on floor area (30,000 SF).
- 2025 OEESC deletes "*where the parking garage section has no mechanical cooling or mechanical heating*" in the exception.

New definition

parking garage section: a part of a parking garage where airflow is restricted from other parts of the garage by solid walls.

6.4.3.8 Demand Control Ventilation

DCV exceptions in 90.1-2019

See next slide for changes

6.4.3.8 Ventilation Controls for High-Occupancy Areas

Demand control ventilation (*DCV*) is required for *spaces* larger than 500 ft^2 and with a design occupancy for *ventilation* of ≥25 people per 1000 ft^2 of floor area and served by *systems* with one or more of the following:

a. *Air economizer*
b. *Automatic* modulating *control* of *outdoor air* damper
c. Design outdoor airflow greater than 3000 cfm

Exceptions to 6.4.3.8

1. *Systems* with exhaust air *energy* recovery complying with, and where required by, Section 6.5.6.1.
2. Multiple-zone *systems* without *DDC* of individual zones communicating with a central *control* panel.
3. *Systems* with a design outdoor airflow less than 750 cfm.
4. *Spaces* where >75% of the *space* design outdoor airflow is required for *makeup air* that is exhausted from the *space* or *transfer air* that is required for *makeup air* that is exhausted from other *spaces*.
5. *Spaces* with one of the following occupancy categories as defined in ASHRAE Standard 62.1: correctional cells, daycare sickrooms, science labs, barbers, beauty and nail salons, and bowling alley seating.

6.4.3.8 Demand Control Ventilation

In 90.1-2022 the DCV thresholds become a little more complex and dependent on climate zone, OA flow, and energy recovery

Exceptions to 6.4.3.8

Removed

1. *Systems* with exhaust air *energy* recovery complying with, and where required by, Section 6.5.6.1.
2. Multiple-zone *systems* without *DDC* of individual zones communicating with a central *control* panel.

Removed

3. *Systems* with a design outdoor airflow less than 750 cfm.
4. *Spaces* where >75% of the *space* design outdoor airflow is required for *makeup air* that is exhausted from the *space* or *transfer air* that is required for *makeup air* that is exhausted from other *spaces*.
5. *Spaces* with one of the following occupancy categories as defined in ASHRAE Standard 62.1: correctional cells, daycare sickrooms, science labs, barbers, beauty and nail salons, and bowling alley seating.

New Exception #4

4. *Spaces* where the requirements of ASHRAE Standard 170, applicable codes, or applicable accreditation standards do not allow the reduction of outdoor airflow.

Standard 170-2021 = Ventilation of Health Care Facilities

6.4.3.8 Demand Control Ventilation

Thresholds are now table based. Was a 500 ft^2, threshold

Table 6.4.3.8 Demand Control Ventilation (DCV) Floor Area Thresholds

Climate Zone	Occupant Outdoor Airflow Component (cfm/1000 ft^2) [a]					
	100 to 199	200 to 399	≥400	100 to 199	200 to 399	≥400
	Minimum Space Floor Area in ft^2 where DCV Is Required					
	Areas without Exhaust Air Energy Recovery			Areas with Exhaust Air Energy Recovery [b]		
7, 8	400	200	150	800	400	250
5A, 6A, 6B	600	250	150	1400	900	400
0A, 0B, 1B, 3A, 4A, 5B, 5C	800	400	250	2000	1000	500
2A, 2B, 4C	1100	600	300	2300	1100	600
3B, 4B	1500	700	400	5200	2350	1250
1A	2400	1100	600	5800	2600	1400
3C	7000	3000	1700	12,000	6000	3000

a. Occupant outdoor airflow component in cfm per 1000 ft^2 shall be calculated as the product of default occupant density and outdoor airflow rate per occupant (R_p) as shown in ASHRAE Standard 62.1, Table 6.2.2.1.
b. Where exhaust air energy recovery is required by Section 6.5.6.1.

6.5.1 Economizers

6.5.1 Economizers. Each cooling *system* shall include either an *air economizer* or *fluid economizer* meeting the requirements of Sections 6.5.1.1 through 6.5.1.5.

Exceptions to 6.5.1: Economizers are not required for the following *systems*:

1. Individual fan-cooling units with a supply capacity less than the minimum listed in Table 6.5.1-1.

Table 6.5.1-1 Minimum Fan-Cooling Unit Size for which an Economizer Is Required

Climate Zone	Cooling Capacity for which an Economizer Is Required	Application
0A, 0B, 1A, 1B	No economizer requirement	All
2A, 2B, 3A, 4A, 5A, 6A, 3B, 3C, 4B, 4C, 5B, 5C, 6B, 7, 8	≥33,000 Btu/h	Fan-cooling units located outside the *building*
	≥54,000 Btu/h	All other fan-cooling-unit locations

Reduced from 54,000 Btu/h for units located *outdoors*

6.5.1 Economizers

- Efficiency Improvement Exception: Clarifications to eliminate an economizer.

Table 6.5.1-2 Eliminate Required Economizer for Comfort Cooling by Increasing Cooling Efficiency

Climate Zone	Efficiency Improvement [a]
4C	64%
5B	59%

a. If a unit is rated with an annualized or part-load metric ~~*IPLV, IEER,* or *SEER*~~, then to eliminate the required economizer, only the annualized or part-load minimum cooling *efficiency* of the ~~HVAC~~ unit must be increased by the percentage shown. If the ~~HVAC~~ unit is only rated with a full-load metric like *EER* cooling then these must be increased by the percentage shown. To determine the *efficiency* required to eliminate the economizer when the unit *equipment efficiency* is rated with an energy-input divided by a thermal-output metric, the metric shall first be converted to COP by the *efficiency* improvement percentage shown. The COP shall then be converted back to the original rated metric to establish the *efficiency* required to eliminate the economizer.

Informative Note: Some examples of annualized or part-load metrics are: IPLV.IP, IEER, and SEER.

6.5.3.7 Small Ventilation Fan Efficiency

- Establishes *minimum* fan efficacy requirements for low-power ventilation fans and references Standard 62.2 for determining the *minimum* ventilation rates for non-transient dwelling units
- Aligns with ENERGY STAR® fan specifications and Oregon *minimum* appliance efficiency standards

Table 6.5.3.7 Minimum Fan Efficacy for Low-Power Fans

System Type	Minimum Fan Efficacy [a, b], cfm/W	Test Method and Rating Conditions
HRV [c], ERV [d], or other system with exhaust air *energy* recovery	1.2	CAN/CSA 439-18
Transfer fans; in-line [e] supply or exhaust fan	3.8	ASHRAE Standard 51
Other exhaust fan, <90 cfm	2.8	
Other exhaust fan, ≥90 cfm and ≤200 cfm	3.5	
Other exhaust fan, >200 cfm	4.0	

6.6.2 Mechanical System Performance Path

NEW: *Optional* Compliance Path

6.6.2 Mechanical System Performance Path

6.6.2.1 Scope. The Mechanical System Performance Path is an optional path for compliance where the following conditions are met:

a. All *HVAC systems* in the *building* that meet the criteria in Section L1.1.1 shall comply with Section 6.6.2.2.

b. All other HVAC *systems* shall comply with one of the following:

   1. HVAC *systems* shall comply with the applicable requirements in Section 6.5.
   2. *HVAC systems* that only serve the heating, cooling, or ventilating needs of a *computer room* with IT *equipment* load greater than 10 kW shall be permitted to comply with ANSI/ASHRAE Standard 90.4, *Energy Standard for Data Centers*.

6.6.2.2 Criteria. *HVAC systems* in new *buildings*, *additions*, or *alterations* shall comply with the requirements in Section L2, "Mechanical System Performance Rating Method." The *proposed design total system performance ratio* ($TSPR_p$) of the *HVAC systems* using this method shall be greater than or equal to the *total system performance ratio* of the *TSPR reference building design* ($TSPR_r$) divided by the mechanical performance factor (MPF) when calculated in accordance with the following:

$$TSPR_p > TSPR_r/\text{MPF}$$

where

$TSPR_p$ = proposed *TSPR* calculated in accordance with Normative Appendix L

$TSPR_r$ = reference *TSPR* calculated in accordance with Normative Appendix L

MPF = mechanical performance factor from Table 6.6.2.2 based on climate zone and *building* use type

Where a *building* has multiple *building* use types, MPF shall be area weighted as follows:

$$\text{MPF} = (A_1 \times \text{MPF}_1 + A_2 \times \text{MPF}_2 + \ldots + A_n \times \text{MPF}_n)/(A_1 + A_2 + \ldots + A_n)$$

6.6.2 Mechanical System Performance Path

NEW: *Optional* Compliance Path

Table 6.6.2.2 Mechanical Performance Factors (MPF)

Building Type	Climate Zone																	
	0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
Office (small and medium)[a]	0.72	0.71	0.70	0.70	0.68	0.65	0.71	0.66	0.62	0.69	0.64	0.65	0.72	0.66	0.65	0.74	0.70	0.75	0.77
Office (large)[a]	0.83	0.83	0.84	0.84	0.79	0.82	0.72	0.84	0.78	0.69	0.80	0.67	0.72	0.75	0.67	0.73	0.73	0.71	0.70
Retail	0.60	0.57	0.50	0.55	0.46	0.46	0.43	0.46	0.38	0.40	0.45	0.48	0.41	0.50	0.47	0.44	0.39	0.40	0.36
Hotel/motel	0.62	0.62	0.63	0.63	0.62	0.68	0.61	0.71	0.73	0.59	0.66	0.65	0.55	0.59	0.68	0.51	0.54	0.47	0.40
Multifamily/ dormitory	0.64	0.63	0.67	0.63	0.65	0.64	0.59	0.68	0.54	0.59	0.57	0.52	0.58	0.53	0.48	0.57	0.53	0.55	0.52
School/education	0.82	0.81	0.80	0.79	0.75	0.72	0.71	0.72	0.68	0.67	0.71	0.65	0.72	0.68	0.60	0.75	0.69	0.72	0.68

a. Office sizes defined in Section L1.1.1.1.

total system performance ratio (TSPR): ratio of the sum of a *building's* annual heating and cooling load in kBtu to the sum of annual *energy* input of the *building* mechanical *systems,* where the input units are in accordance with Section L5.

ASHRAE 90.1 Errata

- ASHRAE publishes Errata to its standards
  - When a published standard, guideline, code, or user's manual, contains an error or errors, an errata sheet may be published.
  - Examples: typographical errors, misprints, misspellings, grammatical errors, omission of material
- Oregon does not *officially adopt* published Errata, but they *ARE part of the code*.
  - Errata are available for 90.1-2022

https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-errata

ASHRAE 90.1 Addenda

- ASHRAE publishes adopted Addenda to its standards
  - Clarifications & New requirements
- Rolled into next update of the standard
- Oregon does **not adopt** published addenda, **not** enforceable
- Gives a sense of forthcoming changes

https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-addenda

Example of ASHRAE 90.1 Addenda

Addendum c to Standard 90.1-2019

Revise Sections 6.3.2 and 6.4.3.3 of the Standard as shown (I-P and SI).

6.3.2 Criteria. The *HVAC system* must meet all of the following criteria:

[. . .]

j. *Systems* serving *spaces* other than ~~hotel/motel guest rooms~~*residential spaces*, ~~and other than those~~ that do not require~~ing~~ continuous operation~~, which have both~~ with a cooling or heating capacity greater than ~~15,000~~ 7000 Btu/h (2.1 kW) ~~and a supply fan motor power greater than 0.75 hp, shall be provided with a time clock that (1) can start and stop the *system* under different schedules for seven different day types per week, (2) is capable of retaining programming and time setting during a loss of power for a period of at least ten hours, (3) includes an accessible *manual* override that allows temporary operation of the *system* for up to two hours, (4) is capable of and configured with temperature *setback* down to 55°F during off hours, and (5) is capable of capable of and configured with temperature setup to 90°F during off hours.~~ shall comply with Sections 6.4.3.3.1 and 6.4.3.3.2.

k. *Systems* serving *residential spaces* other than hotel/motel guest rooms shall comply with Section 6.4.3.3.1 and 6.4.3.3.2 except for electric resistance heaters rated at 1.5 kW or less with a *readily accessible manual control* that lowers the *set point* or turns the unit off.

l. *Systems* serving hotel/motel guest rooms shall comply with Section 6.4.3.3.5.

[. . .]

Example: Simplified building path requirements now apply to smaller HVAC systems

Becomes 7000 Btu/h in 90.1-2022

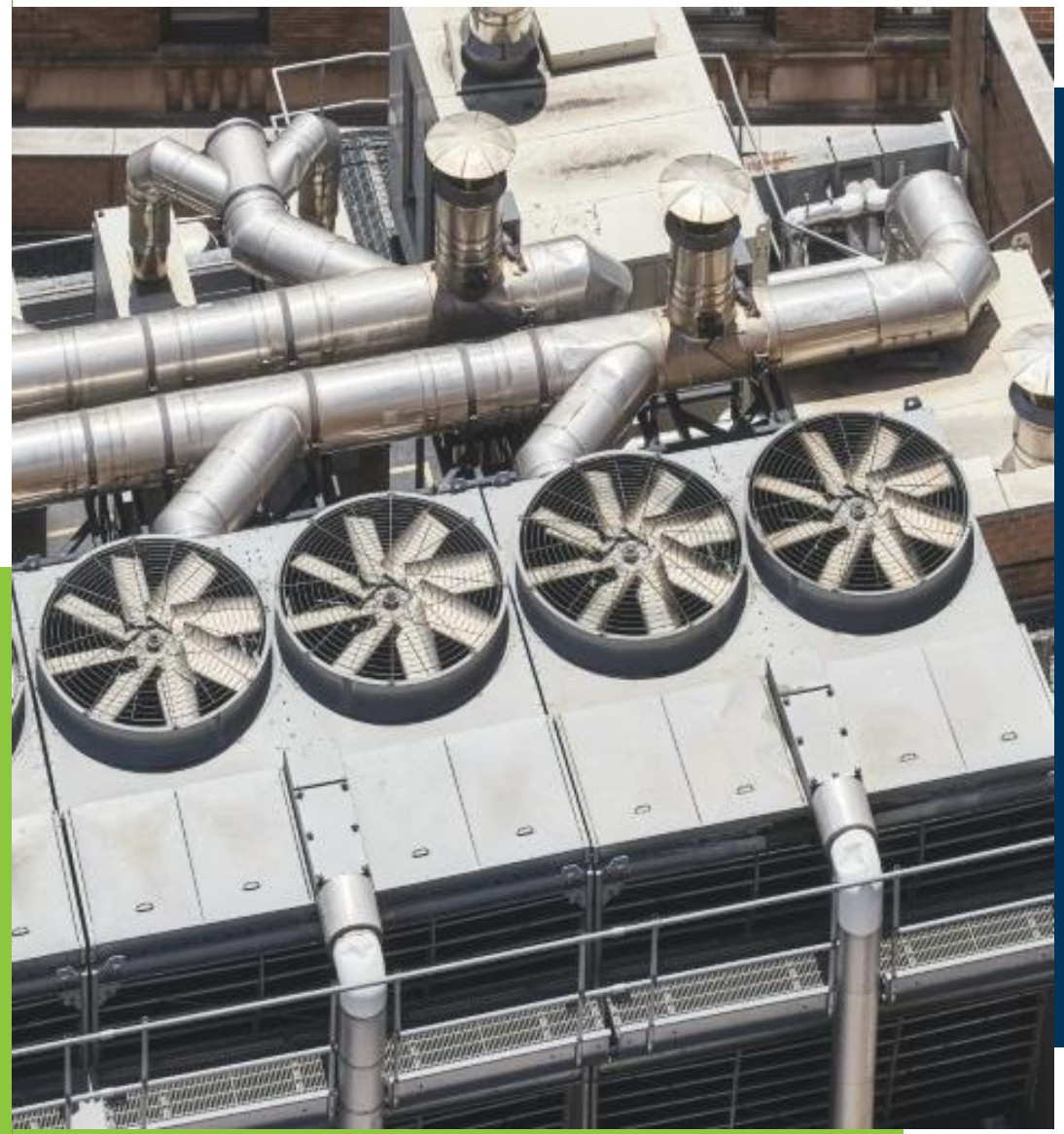
j. *Systems* serving *spaces* other than *residential spaces*, that do not require continuous operation, with a cooling or heating capacity greater than 7000 Btu/h shall comply with Sections 6.4.3.3.1 and 6.4.3.3.2.

k. *Systems* serving *residential spaces* other than hotel/motel guest rooms shall comply with Sections 6.4.3.3.1 and 6.4.3.3.2 except for *electric resistance* heaters rated at 2 hp or less with a *readily accessible manual* control that lowers the *set point* or turns the unit off.

l. *Systems* serving hotel/motel guest rooms shall comply with Section 6.4.3.3.5.

ASHRAE 90.1 Interpretation

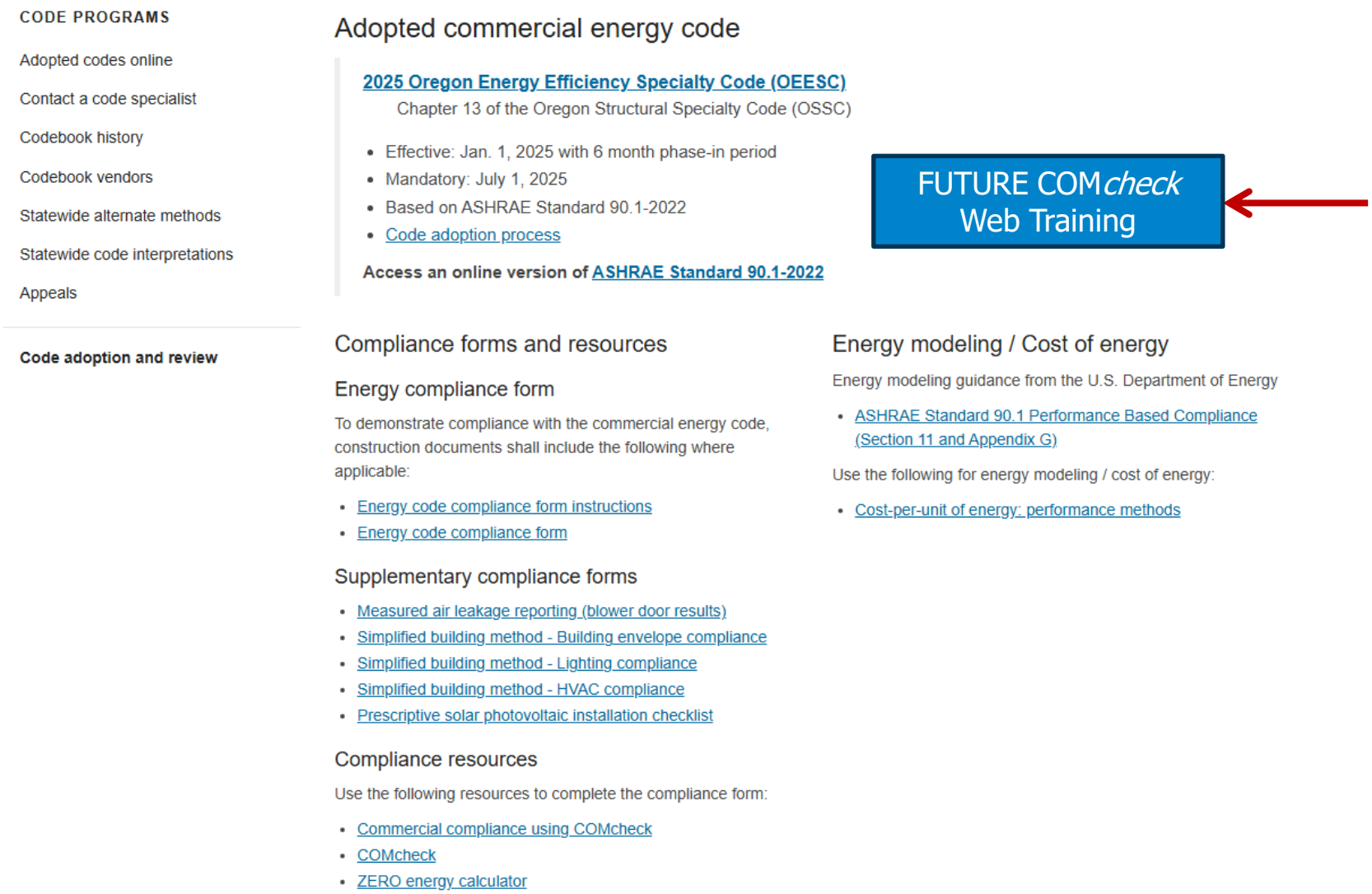
- Formal Interpretation
  - 90.1 Full Committee and Subcommittees review and vote for publication
- Informal Interpretation
  - The responsible 90.1 Subcommittee votes and issues informal interpretations
- **Oregon Interpretation (OEESC)**
  - Informal - Contact the Division for clarification. Informal method is the *most efficient and effective* for most inquiries.
  - Formal - Initiate Process with the Division



New COM*check Web* – Basic Training

See detailed COM*check* presentation for in-depth coverage of this topic

NEW COM*check Web* Training



CODE PROGRAMS

- Adopted codes online
- Contact a code specialist
- Codebook history
- Codebook vendors
- Statewide alternate methods
- Statewide code interpretations
- Appeals

Code adoption and review

Adopted commercial energy code

2025 Oregon Energy Efficiency Specialty Code (OEESC)
Chapter 13 of the Oregon Structural Specialty Code (OSSC)

- Effective: Jan. 1, 2025 with 6 month phase-in period
- Mandatory: July 1, 2025
- Based on ASHRAE Standard 90.1-2022
- Code adoption process

Access an online version of ASHRAE Standard 90.1-2022

FUTURE COM*check* Web Training

Compliance forms and resources

Energy compliance form

To demonstrate compliance with the commercial energy code, construction documents shall include the following where applicable:

- Energy code compliance form instructions
- Energy code compliance form

Supplementary compliance forms

- Measured air leakage reporting (blower door results)
- Simplified building method - Building envelope compliance
- Simplified building method - Lighting compliance
- Simplified building method - HVAC compliance
- Prescriptive solar photovoltaic installation checklist

Compliance resources

Use the following resources to complete the compliance form:

- Commercial compliance using COMcheck
- COMcheck
- ZERO energy calculator

Energy modeling / Cost of energy

Energy modeling guidance from the U.S. Department of Energy

- ASHRAE Standard 90.1 Performance Based Compliance (Section 11 and Appendix G)

Use the following for energy modeling / cost of energy:

- Cost-per-unit of energy: performance methods

What Can COM*check* Do For You?

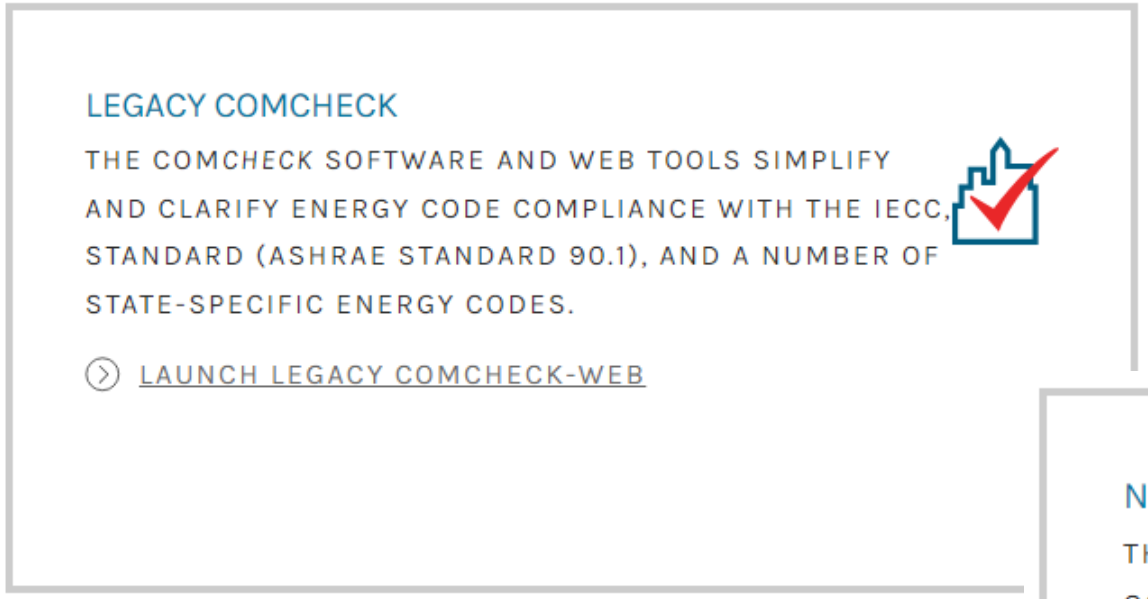
What it IS

- Tool for designers to document project parameters to **demonstrate energy compliance**
- Tool for plans examiners & inspectors to **verify energy code compliance**
- Helpful resource to focus energy code review to certain areas

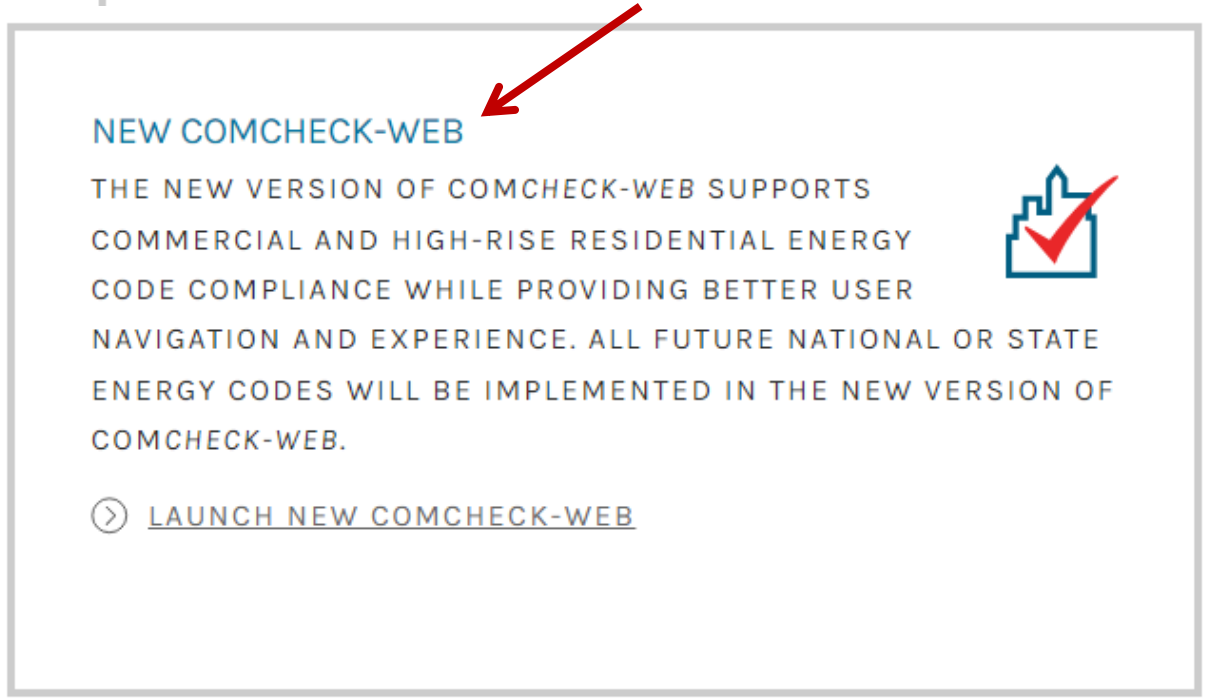
What it is NOT

- Proof that the ***ENTIRE*** design complies
- Foolproof
- A substitute for documentation on plans and specs
- An energy model

LEGACY & NEW COM*check Web*



https://www.energycodes.gov/software-tools



- Both COM*check* versions *are* available.
- Project Teams with projects in the LEGACY version *will* stay active.
- Files *will transfer* to NEW COM*check Web* from LEGACY COM*check*

NEW COM*check Web* Basics

New COMcheck-Web | Building Energy Codes Program

Load Time Delays

COMcheck-Web is currently experiencing some slower-than-expected load and response times. Our team is working diligently to address this issue. We apologize for any inconvenience this may cause and greatly appreciate your patience and understanding.

The new version of COMcheck-Web supports commercial and high-rise residential energy code compliance while providing better user navigation and experience. All future national or state energy codes will be implemented in the new version of COMcheck-Web.

NEW ENERGY CODES

- ASHRAE 90.1-2022
- 2023 Minnesota Energy Code

NEW FEATURES

- Advanced reporting
- Data Entry Wizards
- Data imports for lighting
- Project sharing
- Improved user help and guidance

Note: To login to the New COMcheck-Web application, a new login account must be set up with a valid email address from the login screen!

MUST create a new Login

LAUNCH NEW COMCHECK-WEB

RELEASE DATE: APRIL 12, 2024

RELEASE NOTES

WHAT'S NEW:

NEW COMCHECK-WEB: APRIL 12, 2024

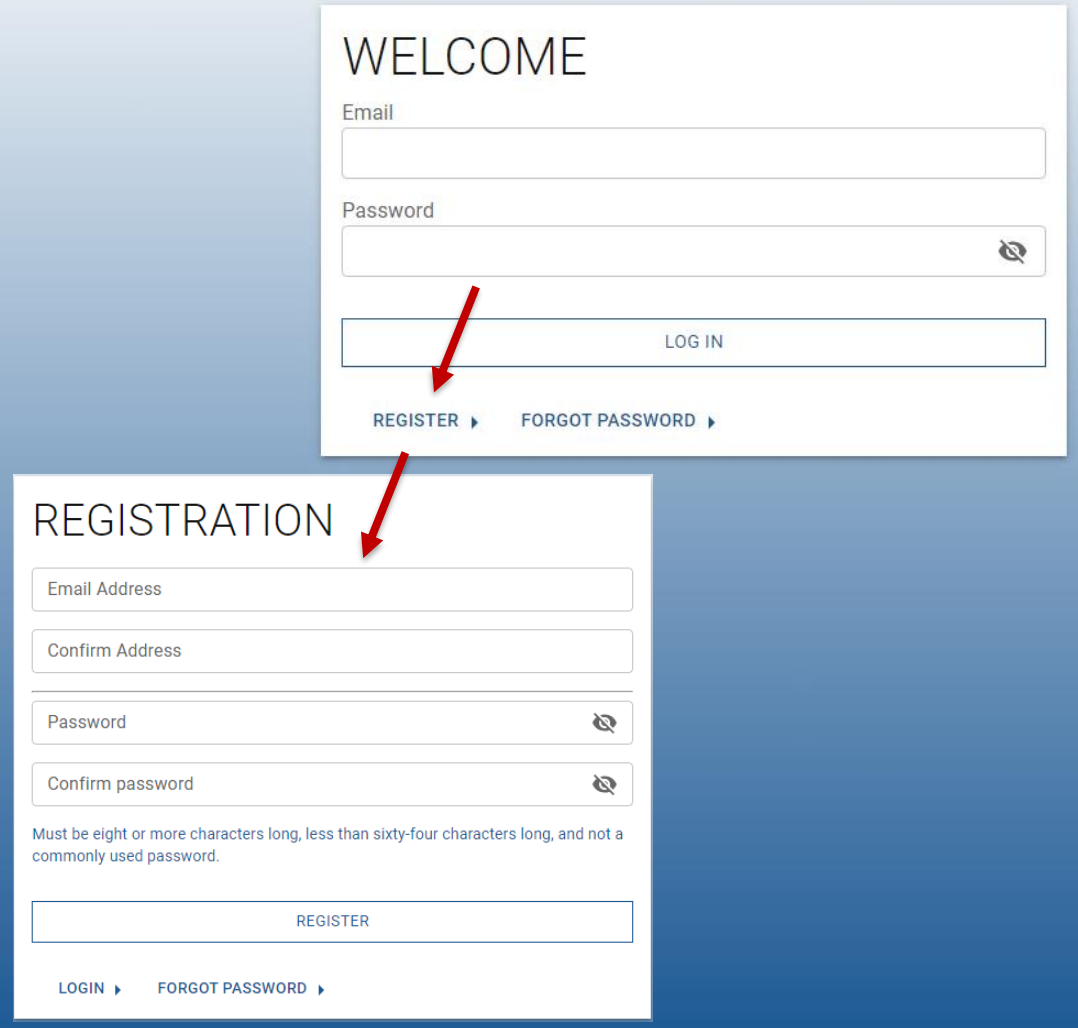
RELEASE ADDRESSES THE FOLLOWING:

- SUPPORT OF 90.1-2022 STANDARD
- STATE-SPECIFIC: 2022 DENVER, 2023 MASSACHUSETTS, 2023 MINNESOTA
- NEW PROJECT DASHBOARD FOR IMPROVED PROJECT MANAGEMENT
- PROJECT SHARING ADDED
- NEW INPUT WIZARDS FOR ENVELOPE, LIGHTING AND HVAC
- IMPROVED USER HELP AND GUIDANCE
- MOBILE APP FOR INSPECTIONS
- **A NEW LOGIN ACCOUNT WITH A VALID EMAIL ADDRESS MUST BE SET UP FOR ACCESS TO NEW COMCHECK**

NEW COM*check Web* Basics

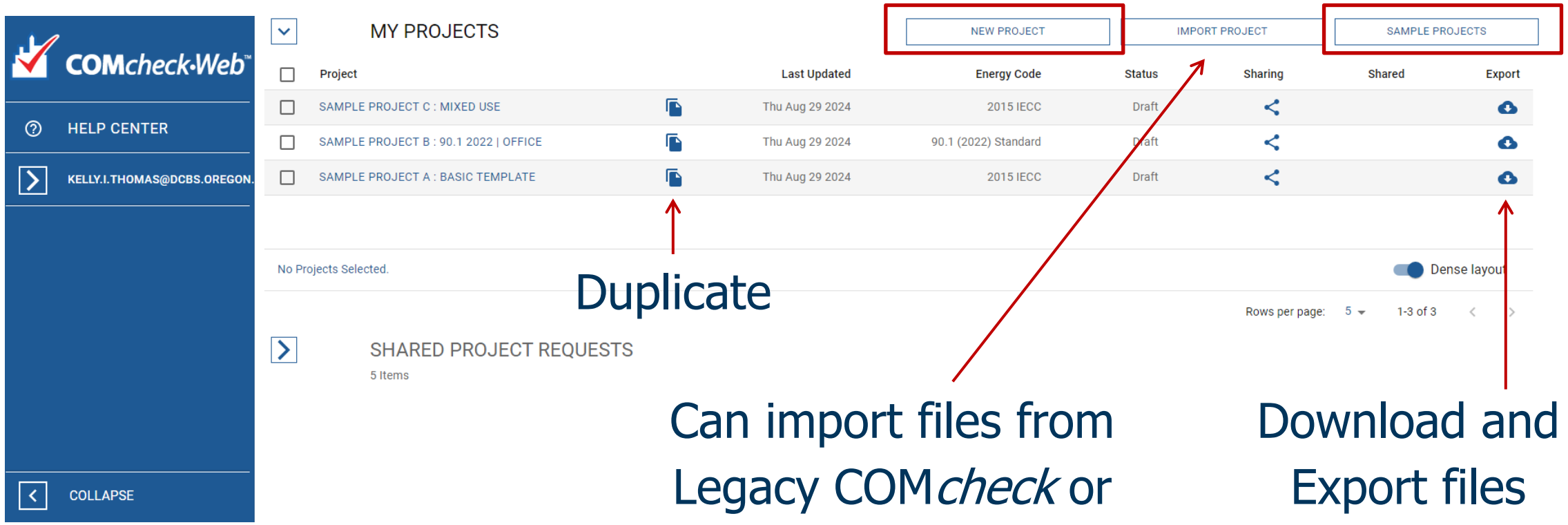
COMcheck•Web™

MUST register a NEW account with NEW password



NEW COM*check Web* Basics

Project Dashboard



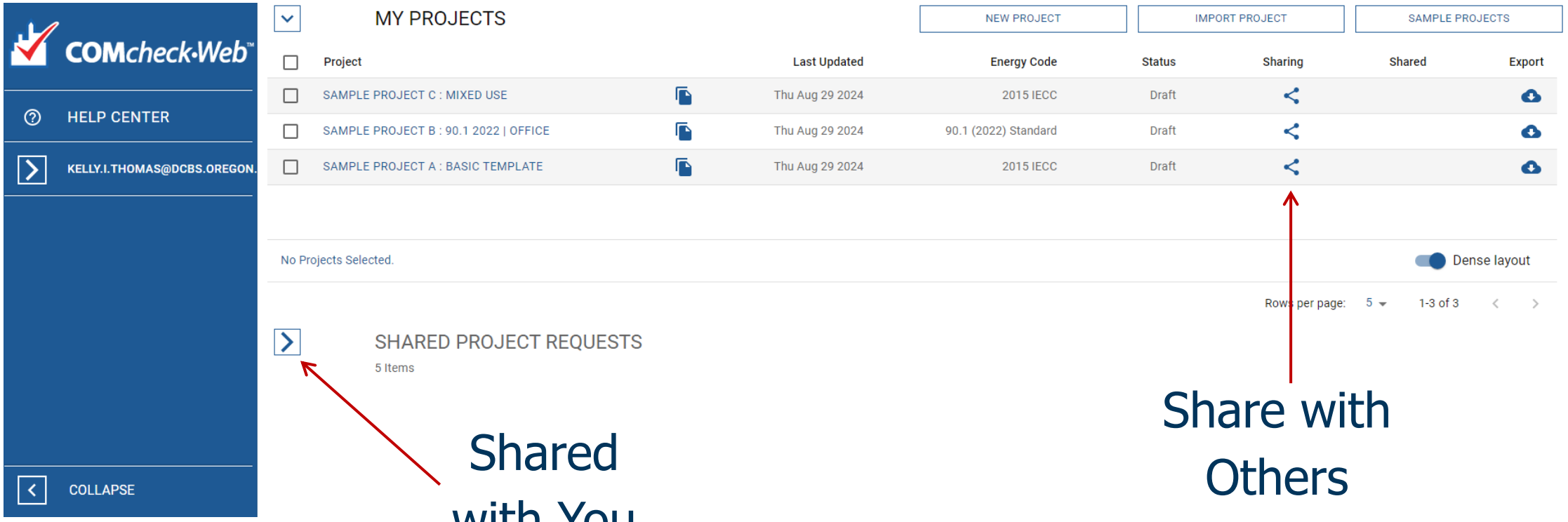
Duplicate

Can import files from Legacy COM*check* or Desktop versions

Download and Export files

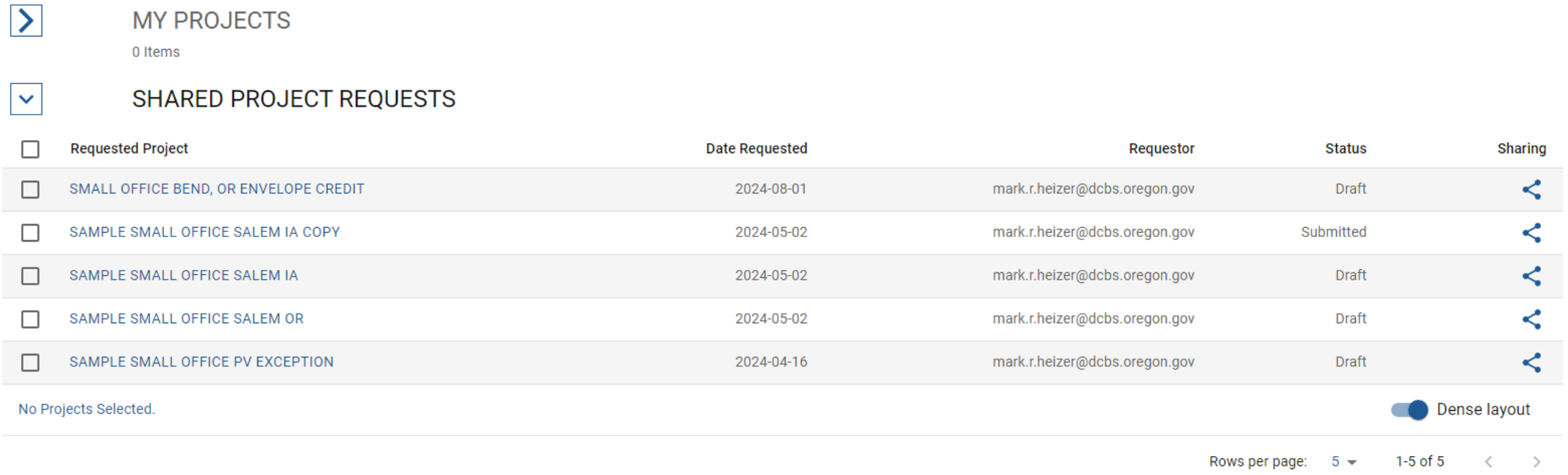
NEW COM*check Web* Basics

Project Dashboard – Sharing Files



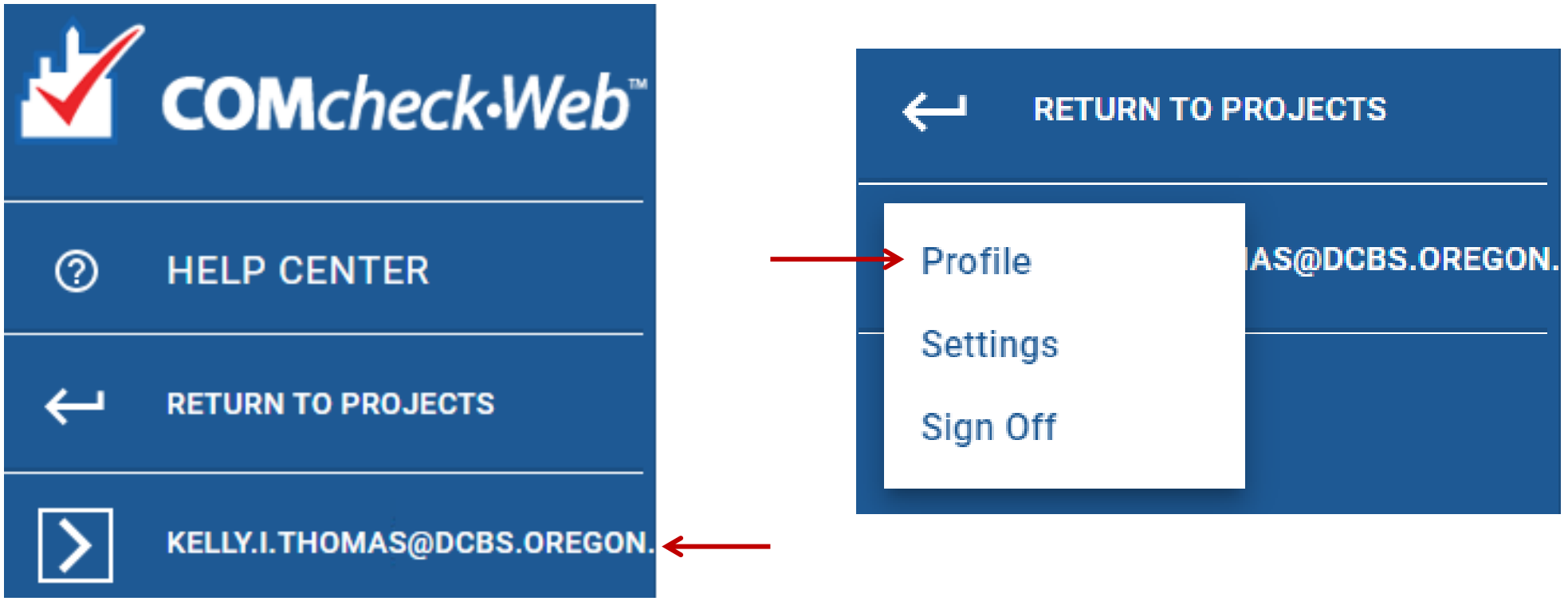
NEW COM*check Web* Basics

- Envelope, Mechanical, and Electrical can be submitted *at the same time* under same project file (same software version, building area, code version, city/location, etc.)



NEW COM*check Web* Basics

Sharing is *only* available if a contact is in your Address Book.



NEW COM*check Web* Basics

Address Book

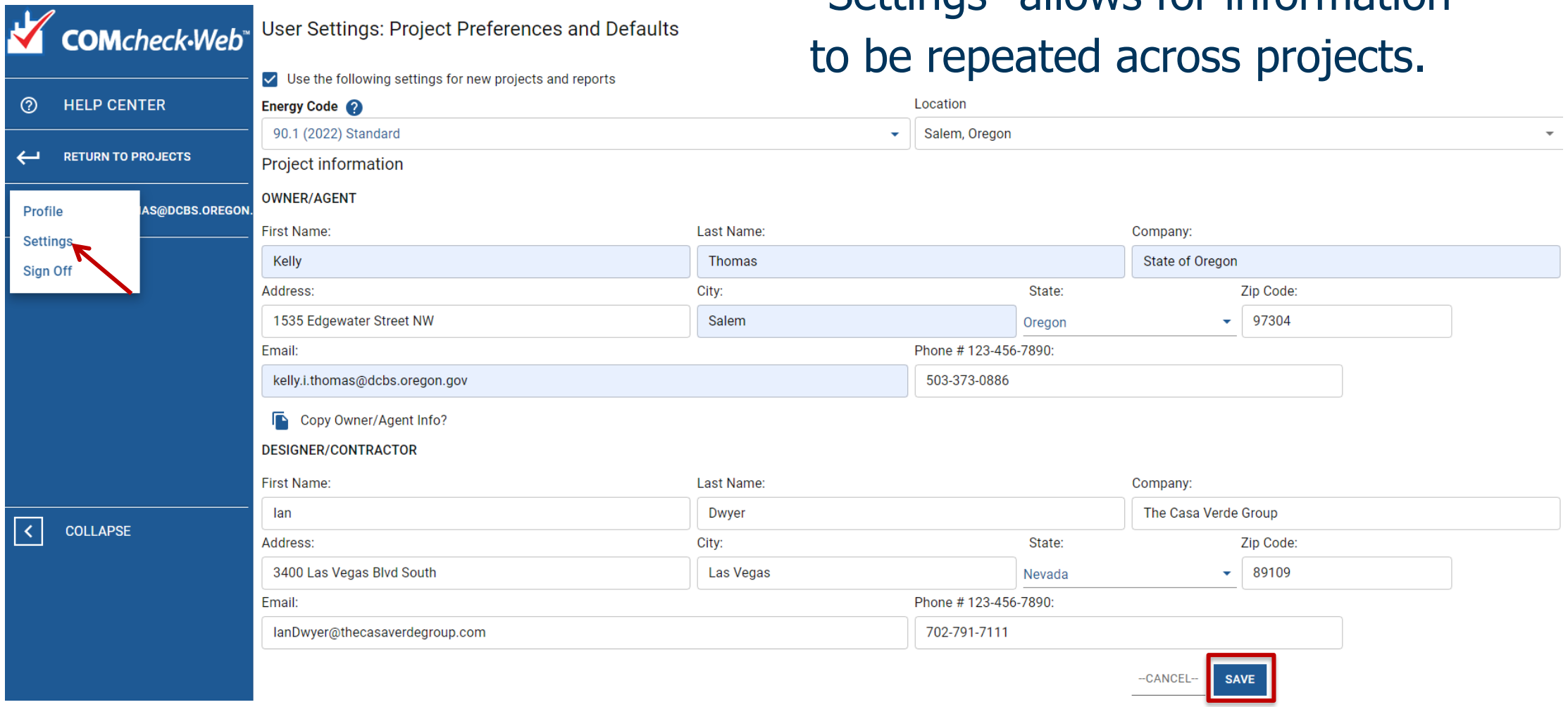
Email	Name
kelly.i.thomas@dcbs.oregon.gov	Kelly Thomas, LEED BD+C
Mark.R.HEIZER@dcbs.oregon.gov	Mark
victor.salcido@pnnl.gov	Rob Salcido
New entry email	New entry name

MUST enter contacts into your Address Book

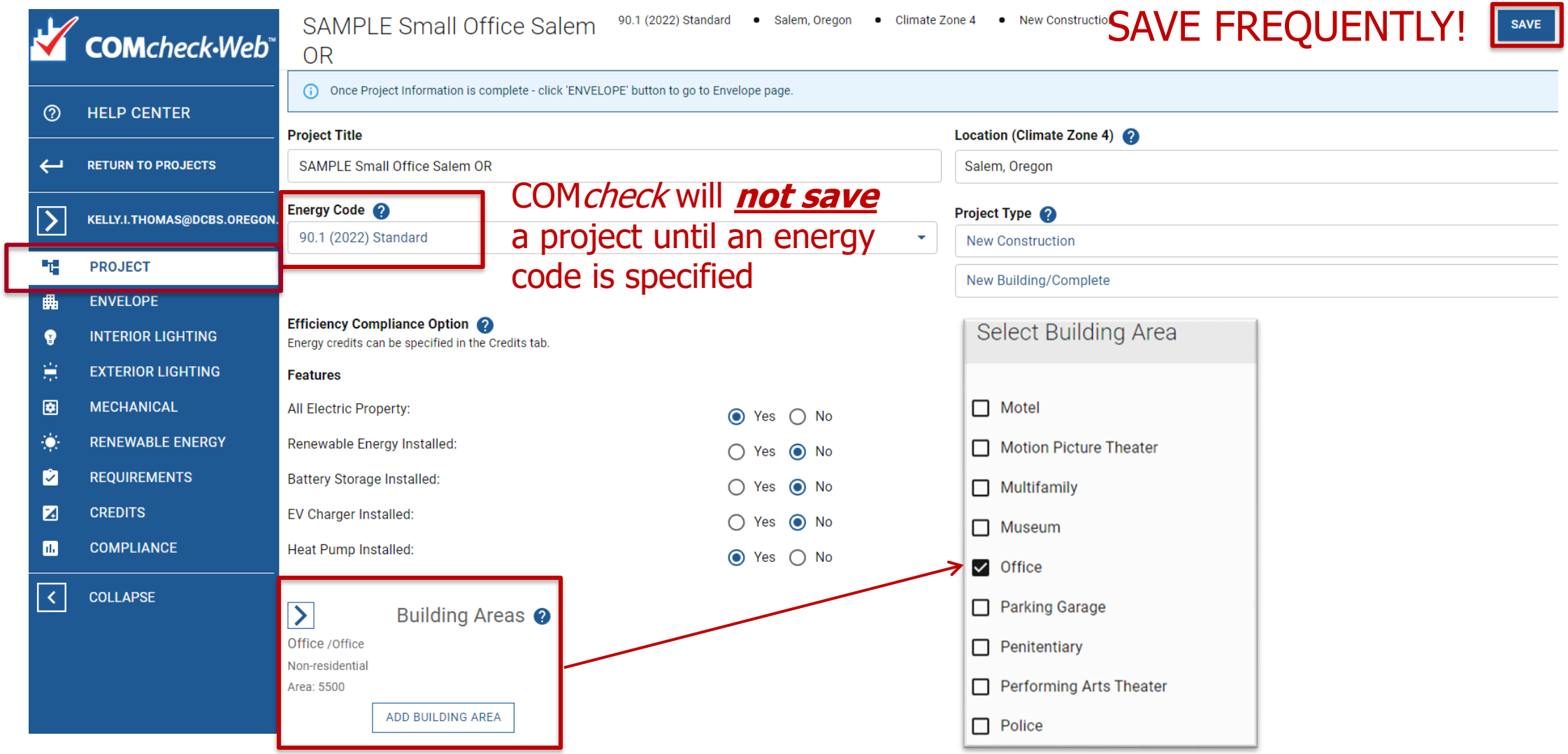
Anne.GIRE@dcbs.oregon.gov	Anne Gire

NEW COM*check Web* Basics

"Settings" allows for information to be repeated across projects.

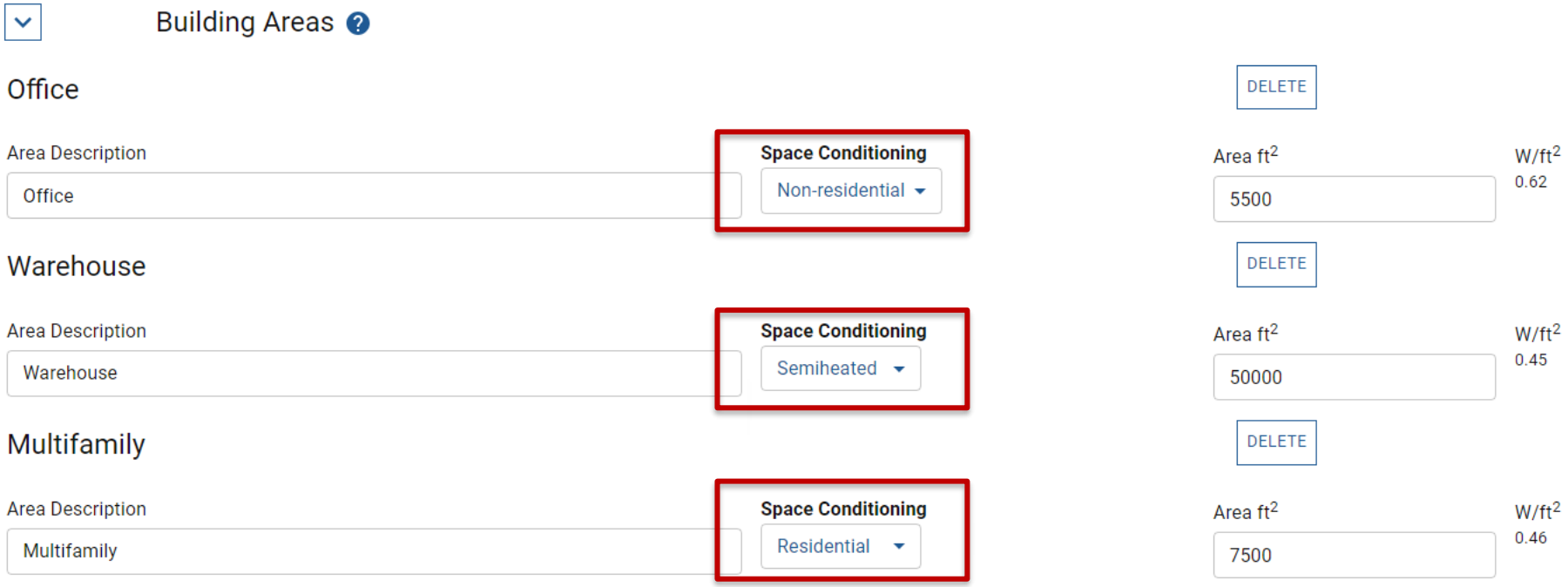


NEW COM*check Web* Basics



NEW COM*check Web* Basics

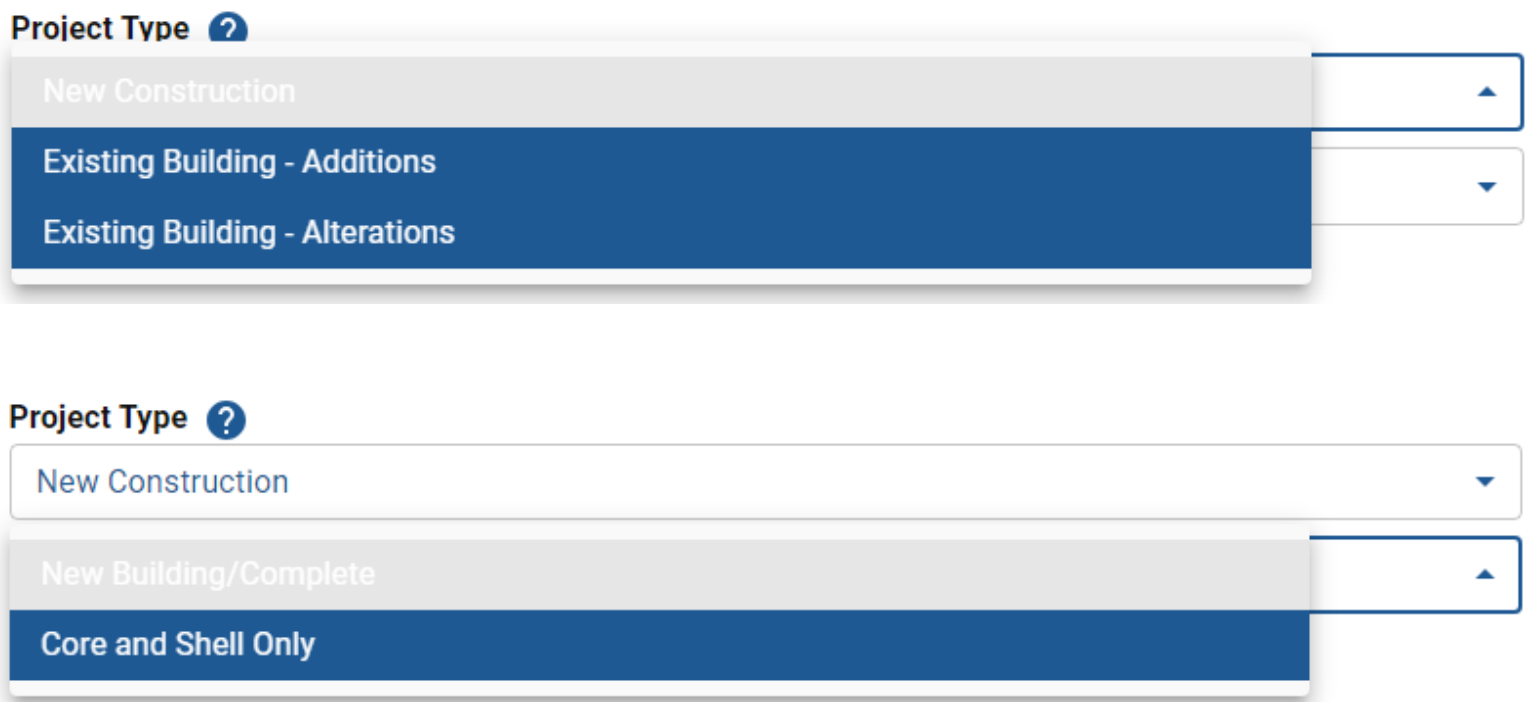
Project Screen: Building Area Types



- Primarily impacts envelope compliance
- Whole building types which describe the envelope
- Space conditioning type: Nonresidential, Residential, Semi-heated

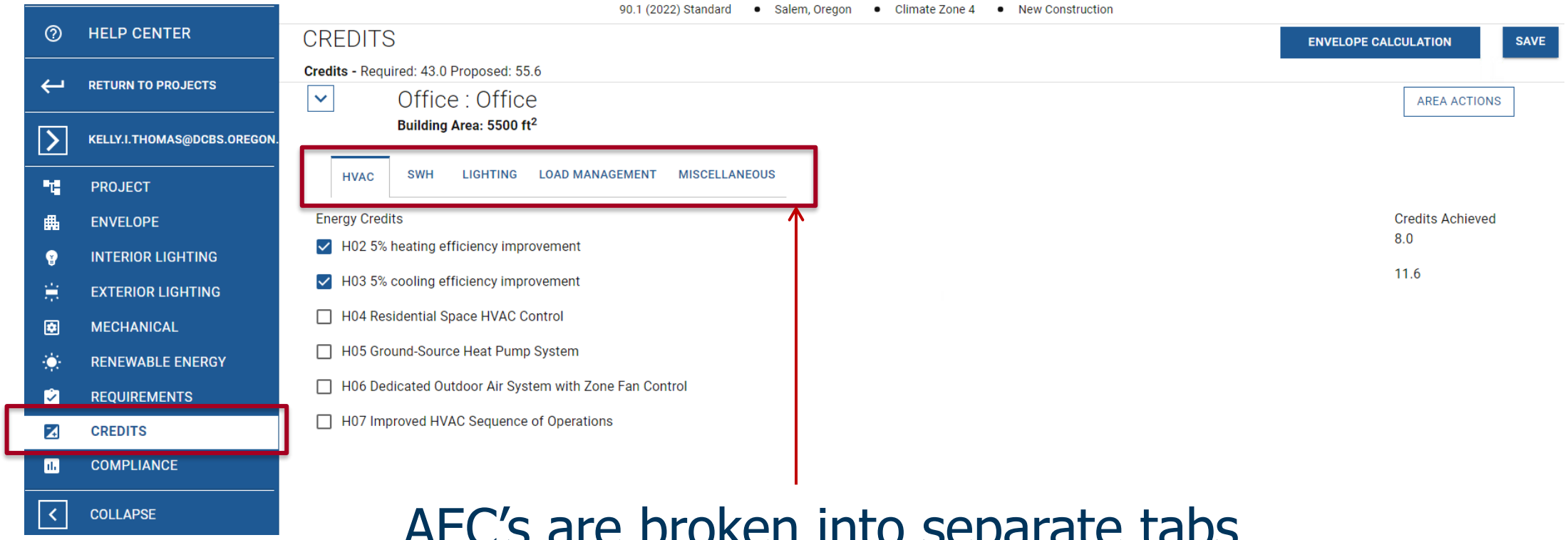
NEW COM*check Web* Basics

Project Screen: Project Types



NEW COM*check Web* Basics

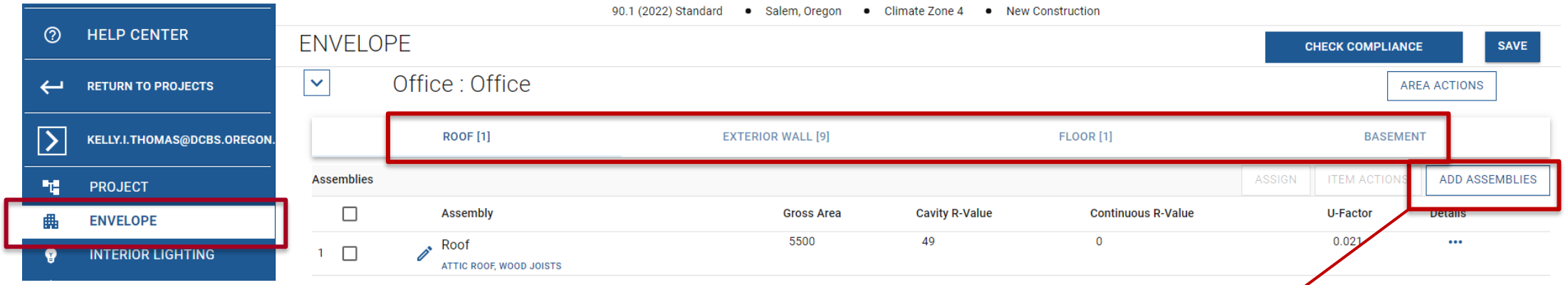
Project Screen – Additional Energy Credits (AEC's)



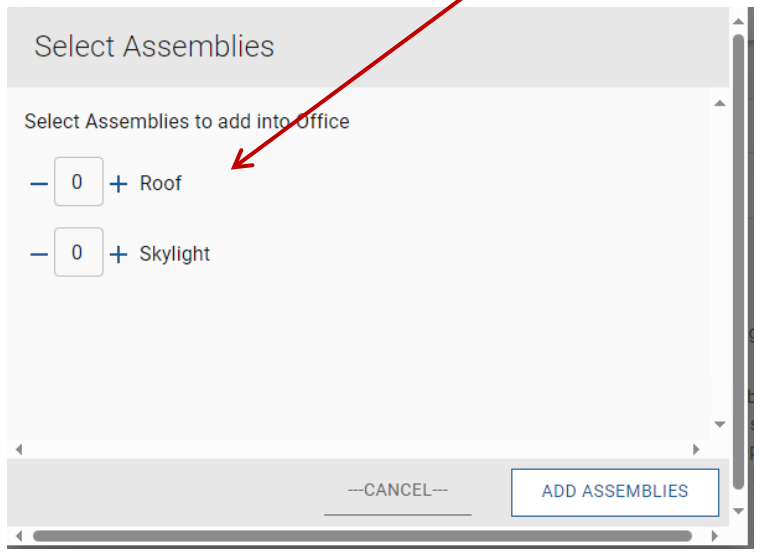
AEC's are broken into separate tabs

NEW COM*check Web* Basics

Envelope: Opaque Assemblies

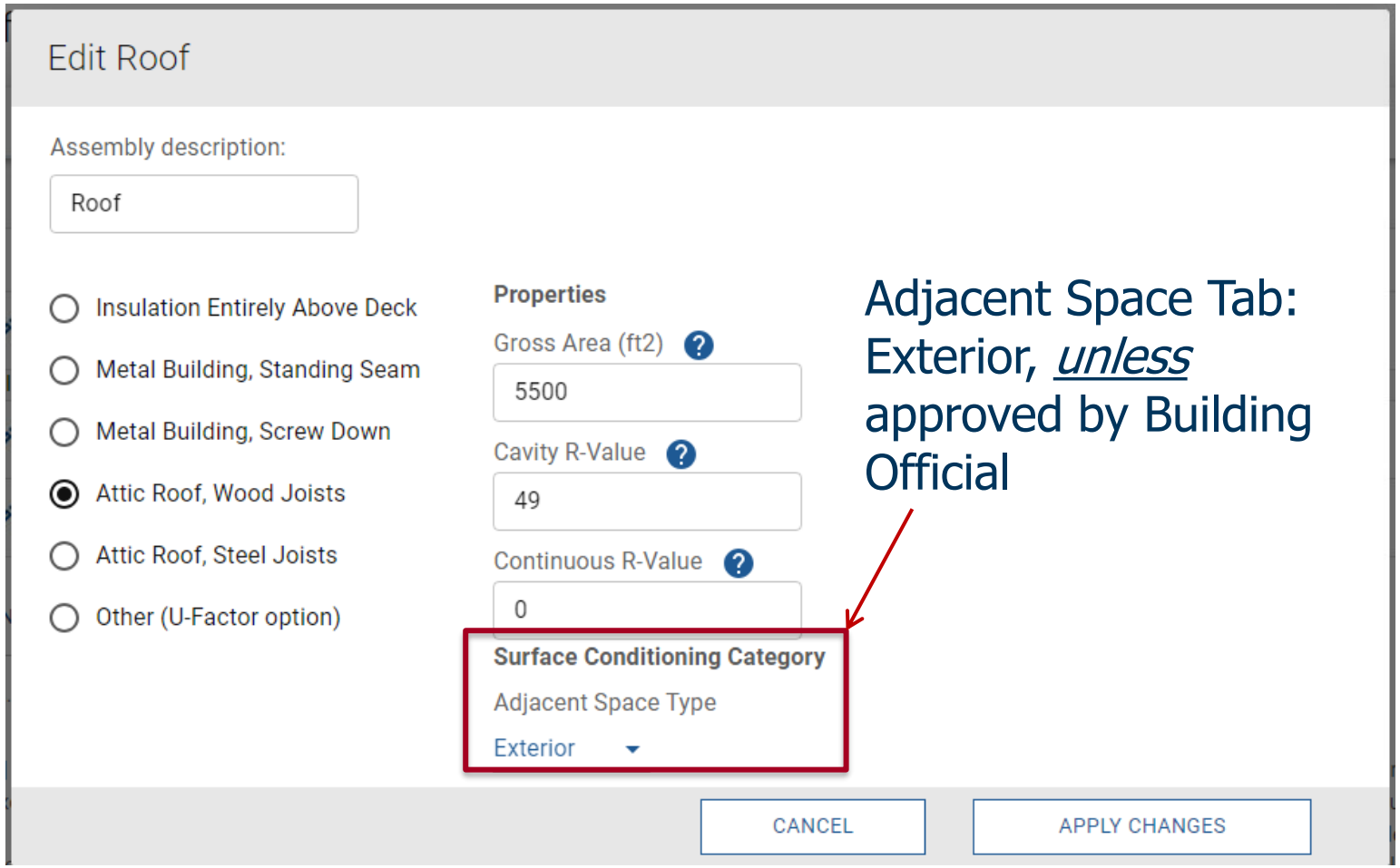


- Entering envelope components is a different pattern
  - Select envelope component tab (roof, exterior wall, floor or basement)
  - Select "Add Assemblies" button and determine number of components
  - Edit components



NEW COM*check Web* Basics

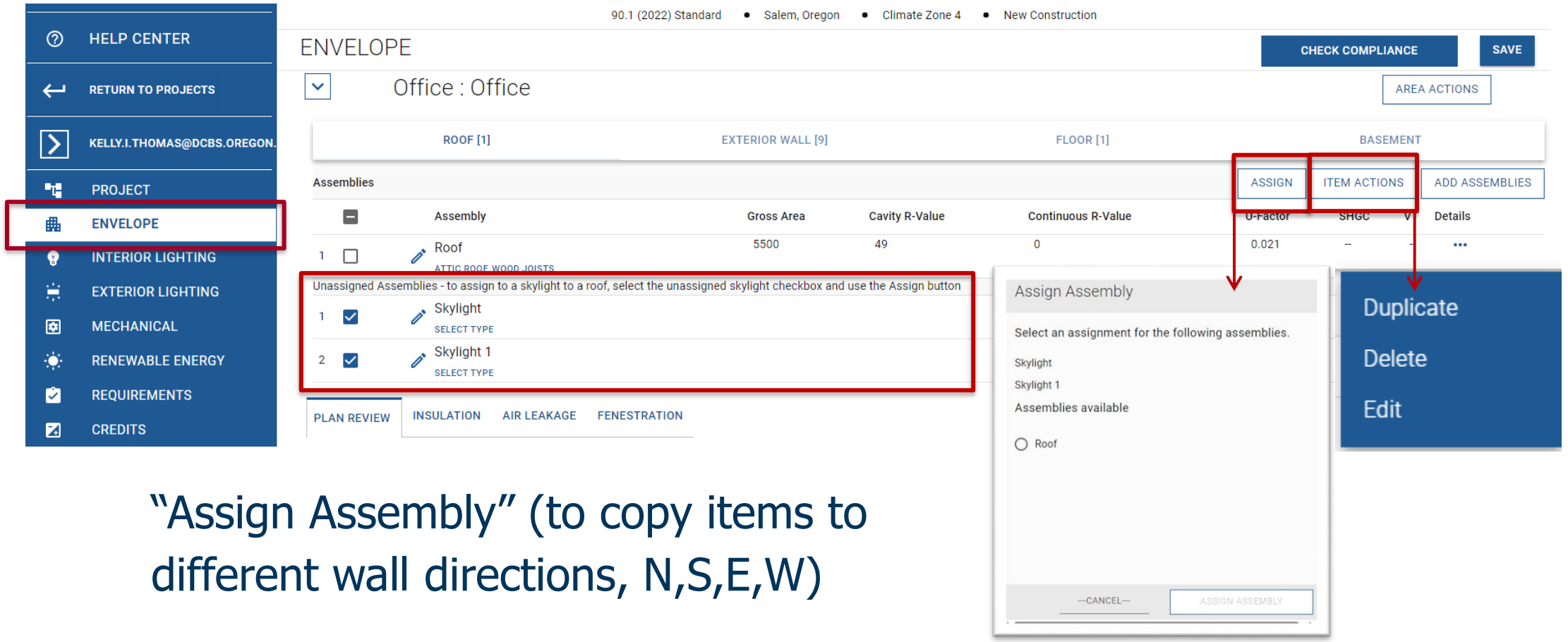
Envelope: Opaque Assemblies "Pop-Up" Menu



Adjacent Space Tab: Exterior, *unless* approved by Building Official

NEW COM*check Web* Basics

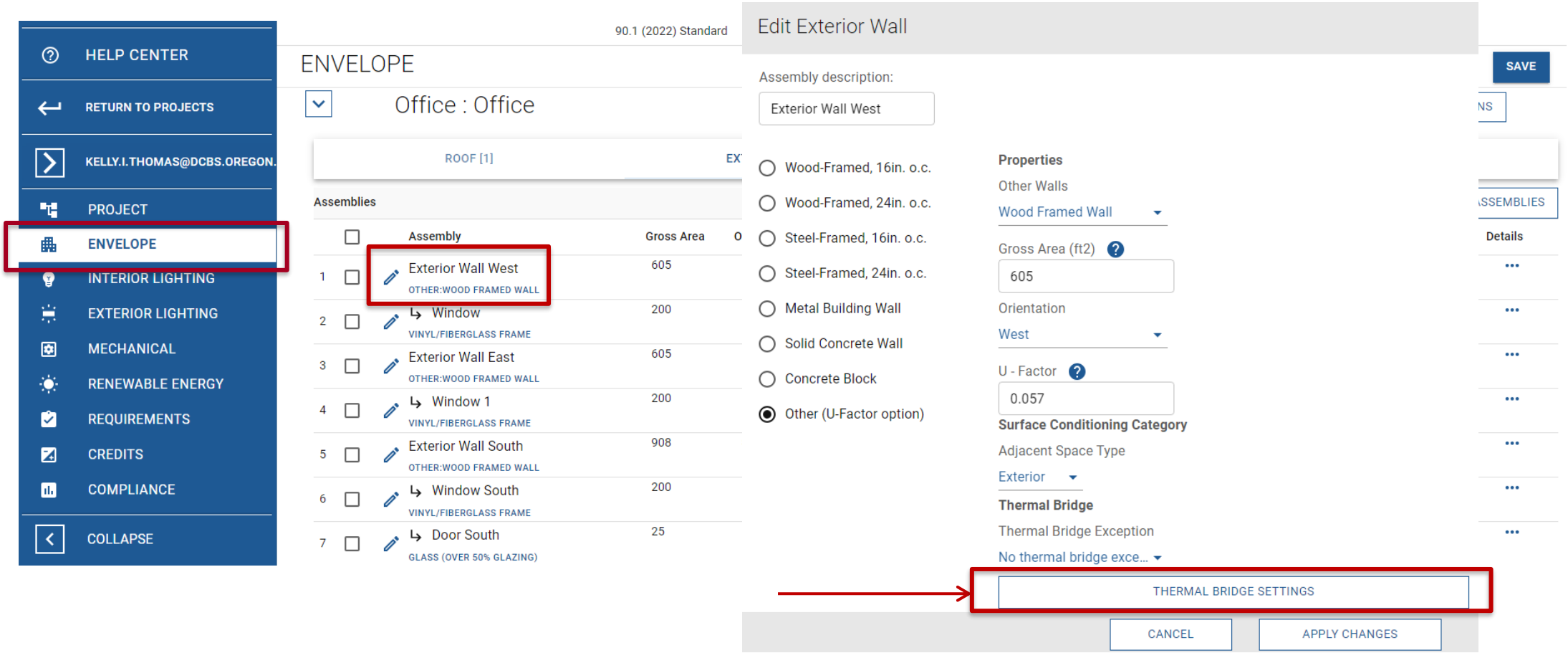
Envelope: Opaque Assemblies (Con't)



"Assign Assembly" (to copy items to different wall directions, N,S,E,W)

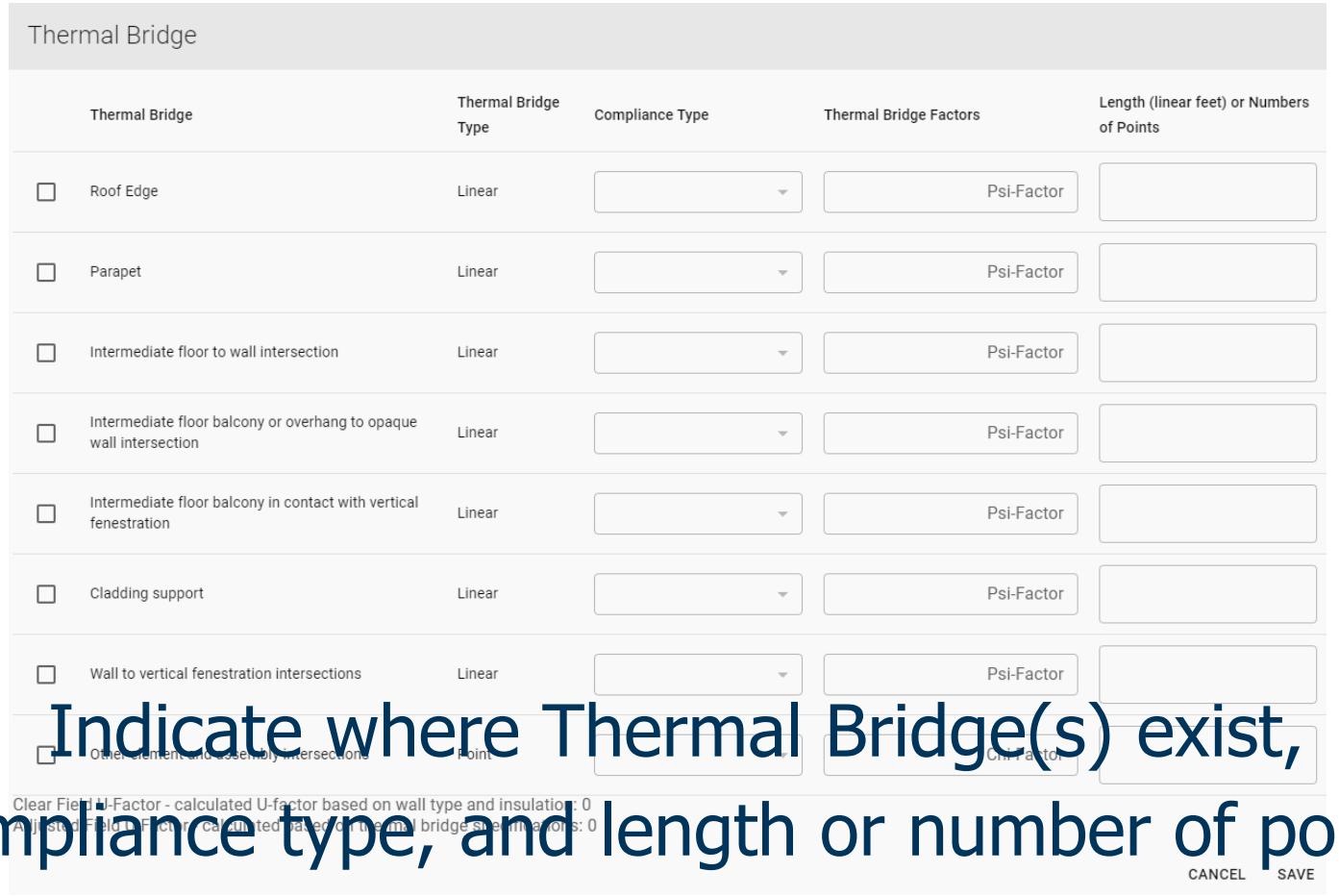
NEW COM*check Web* Basics

Envelope: Thermal Bridging Tab



NEW COM*check Web* Basics

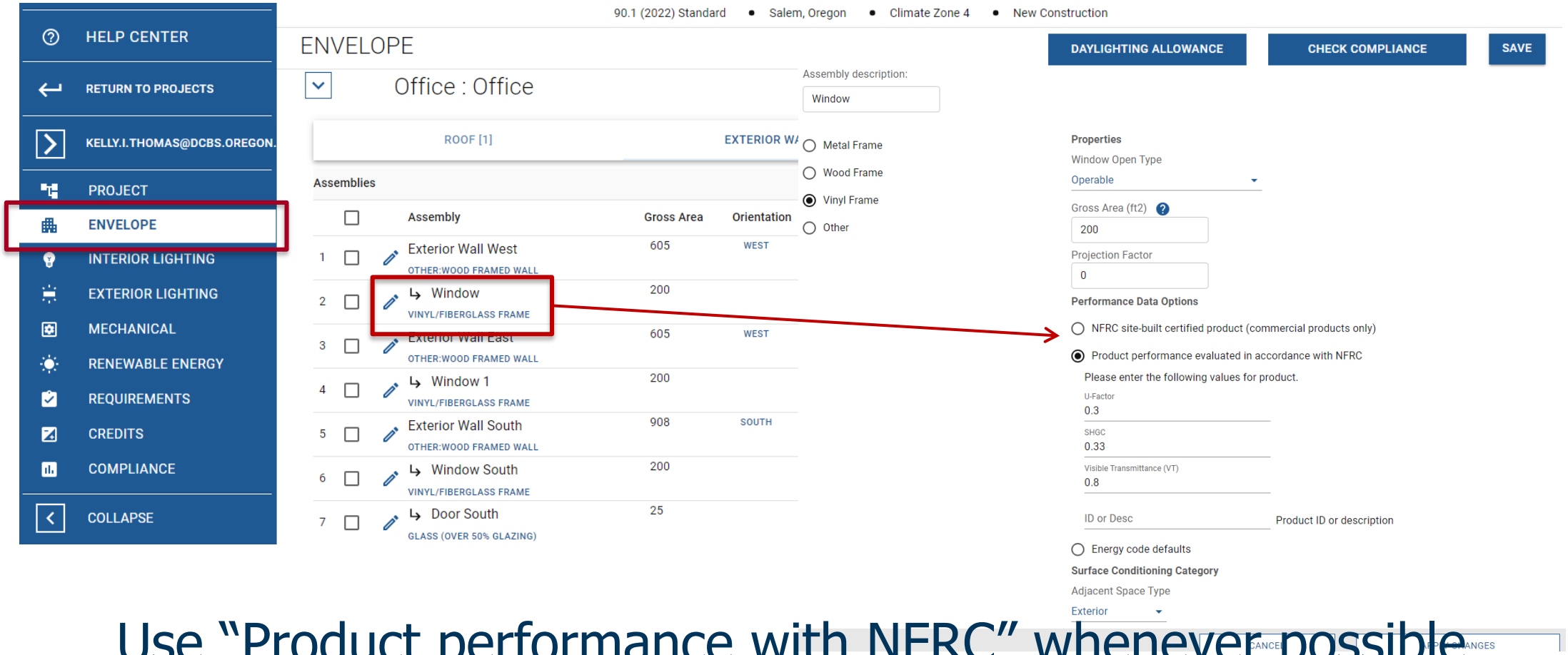
Thermal Bridging "Pop-Up" Menu



Indicate where Thermal Bridge(s) exist, compliance type, and length or number of points

NEW COM*check Web* Basics

Envelope: Fenestration

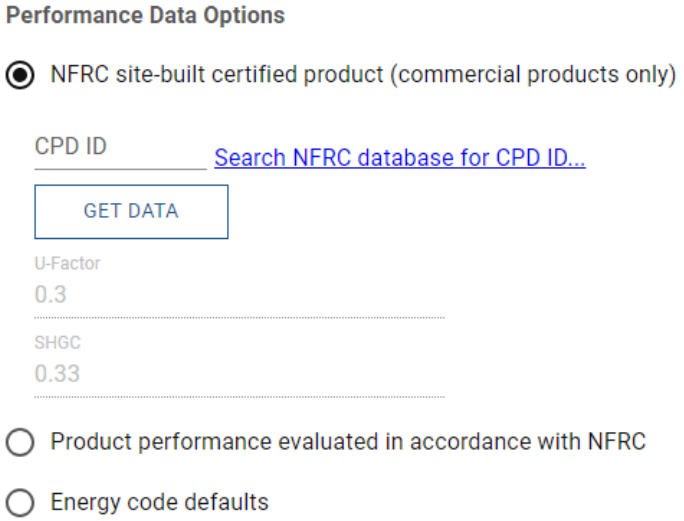


Use "Product performance with NFRC" whenever possible

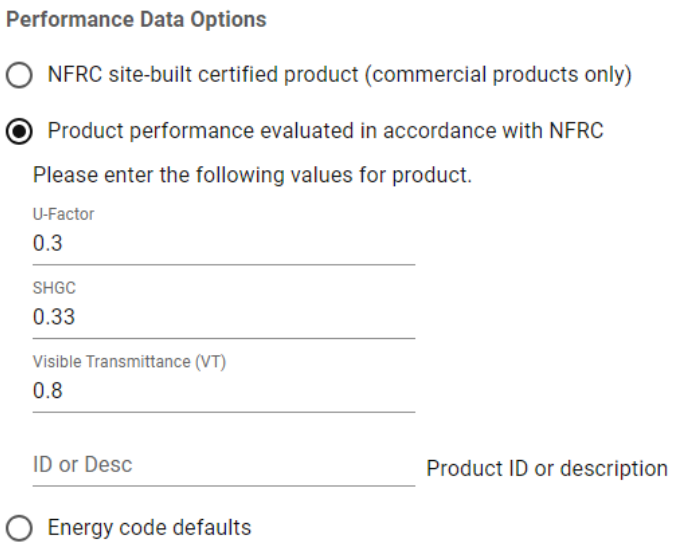
NEW COM*check Web* Basics

Envelope: Fenestration

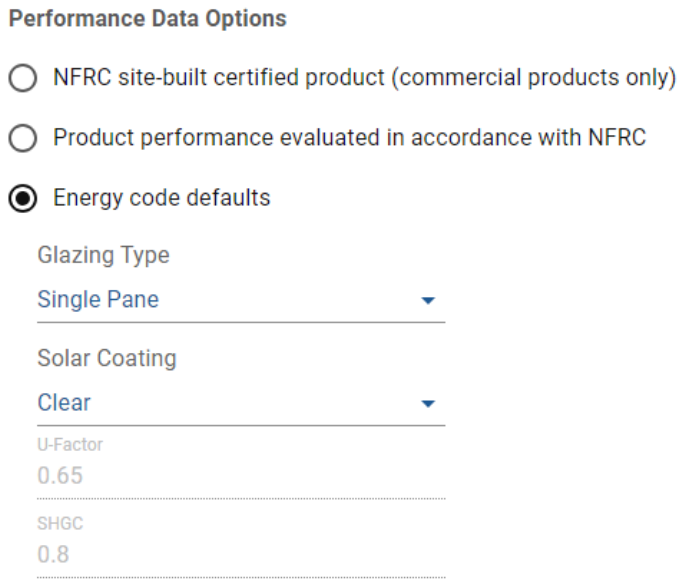
NFRC site-built certified product



Performance evaluated (per NFRC guidelines) – **Most Common**

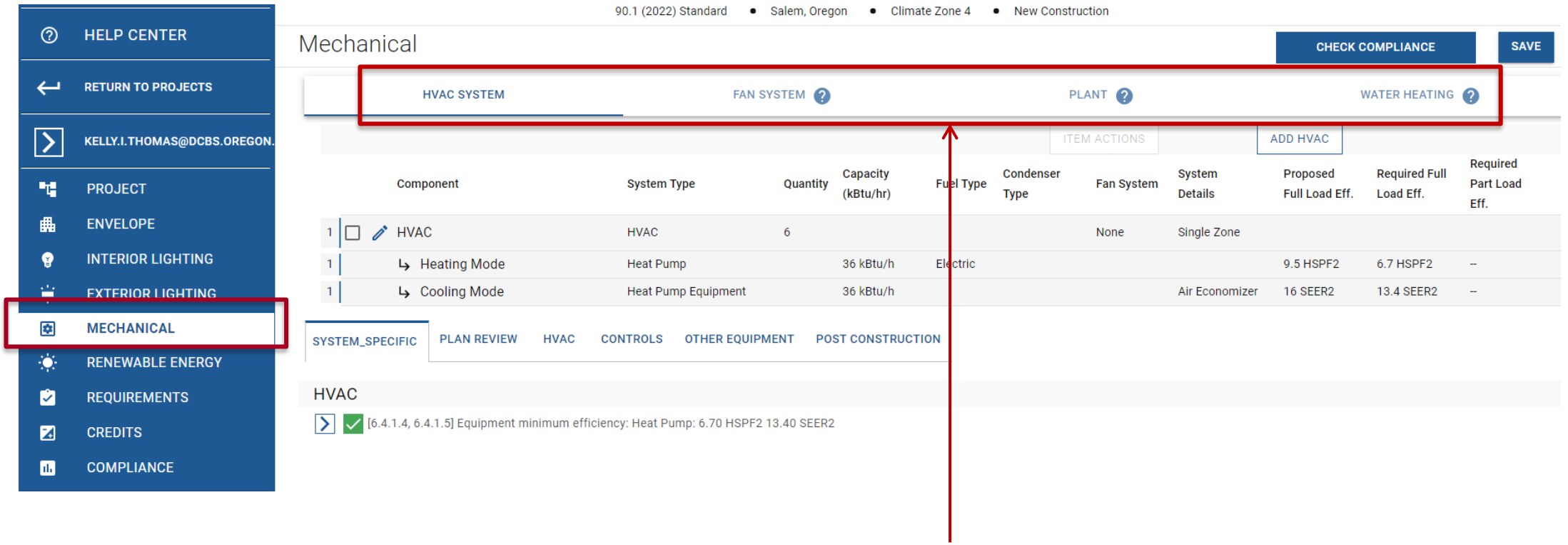


Energy code defaults – **<u>will not comply</u>**



NEW COM*check Web* Basics

Mechanical

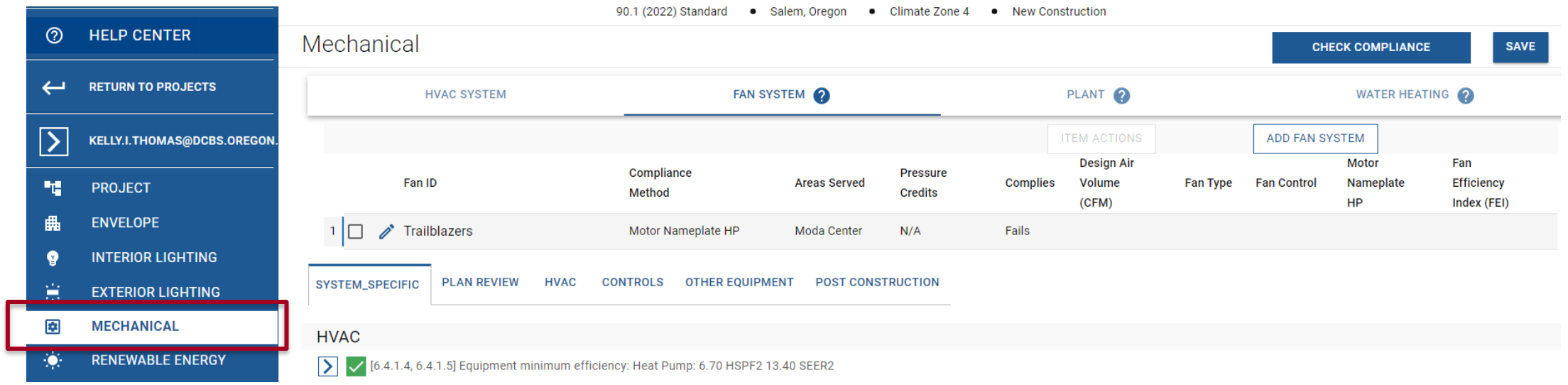


HVAC, Fan, Plant, and Water Heating on separate tabs

NEW COM*check Web* Basics

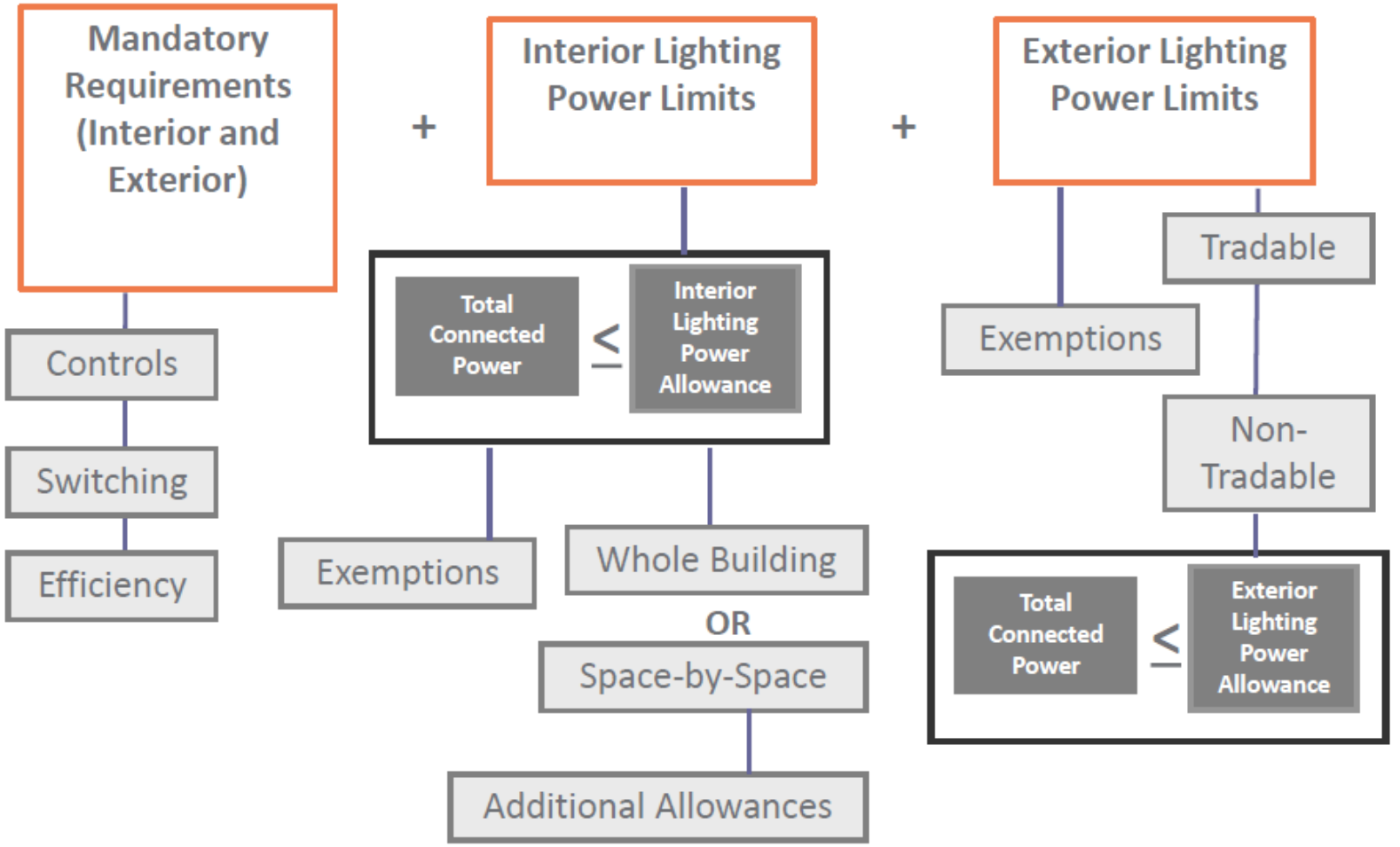
Mechanical

- Determines Fan Power Limitations compliance for each *regulated* fan system
- Motor nameplate HP and brake HP
  - Brake HP includes pressure drop credits as applicable



NEW COM*check Web* Basics

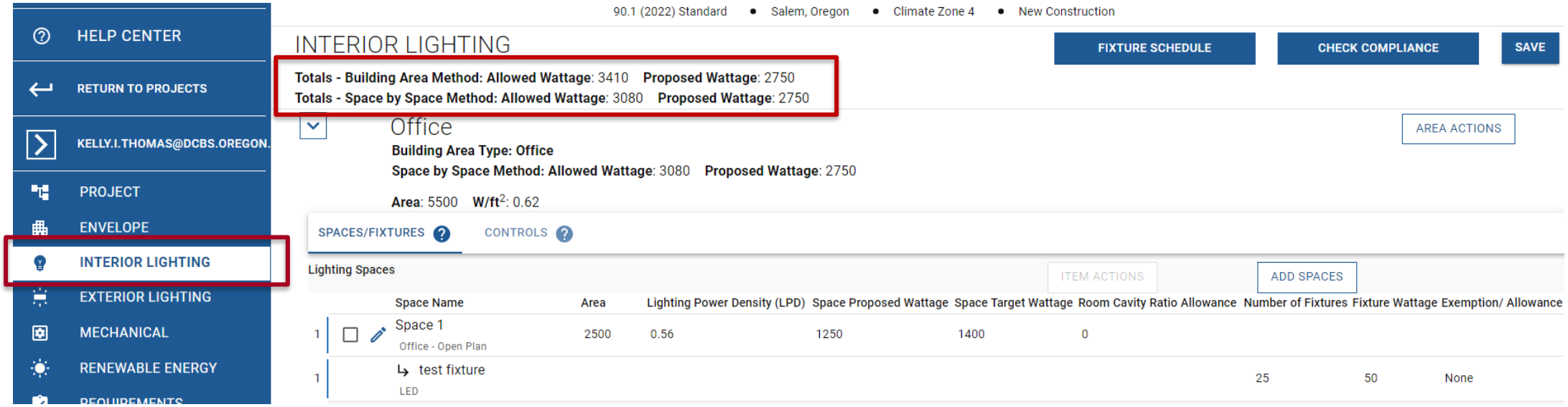
Lighting Compliance



NEW COM*check Web* Basics

Interior Lighting

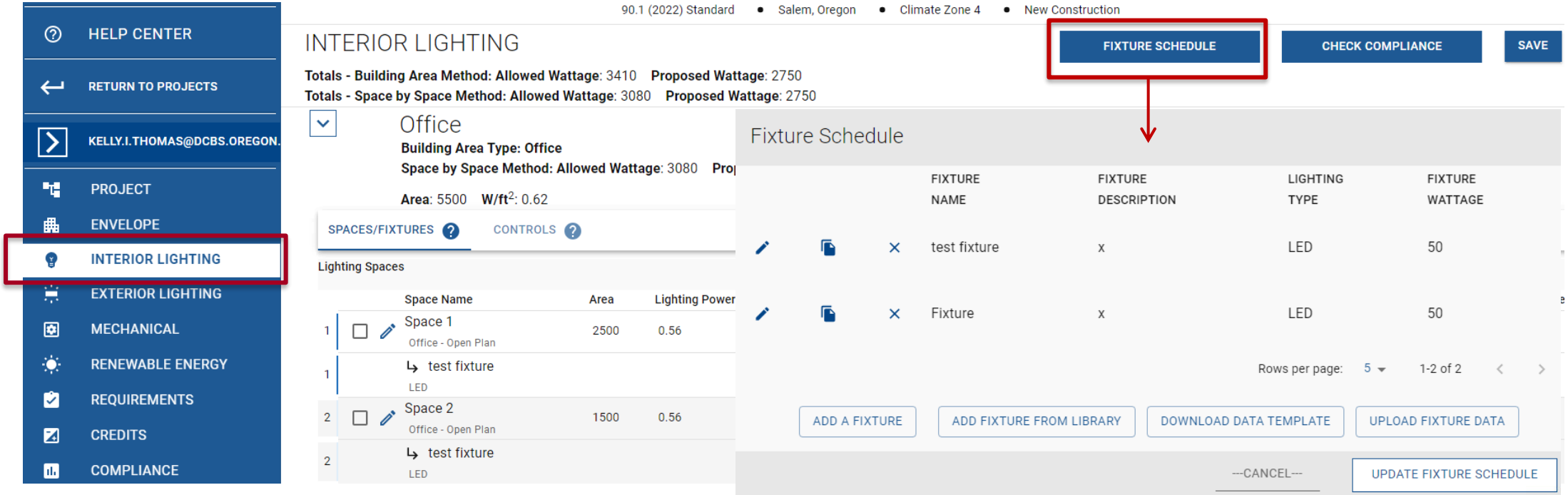
- COM*check* determines lighting power densities in interior lighting and exterior lighting screens
  - Automatically examines *both* building area and space-by-space lighting compliance methods



NEW COM*check Web* Basics

Interior Lighting

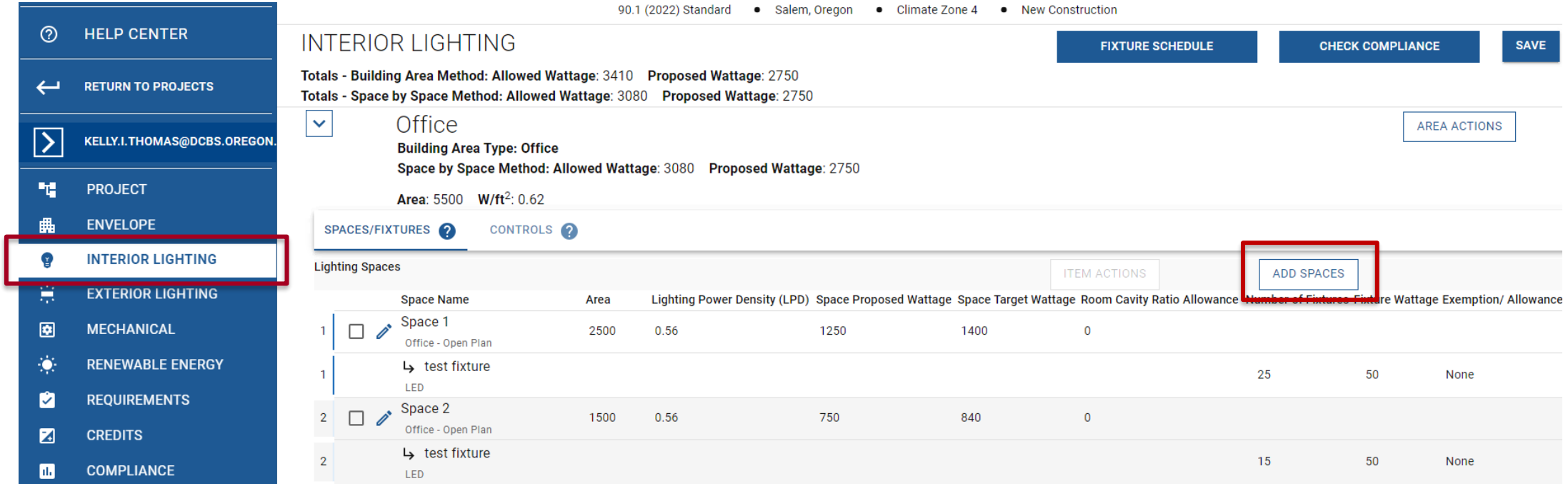
- COM*check* lighting dashboard highlights building areas, spaces, fixtures, wattages, and controls. User can *import fixture schedules*



NEW COM*check Web* Basics

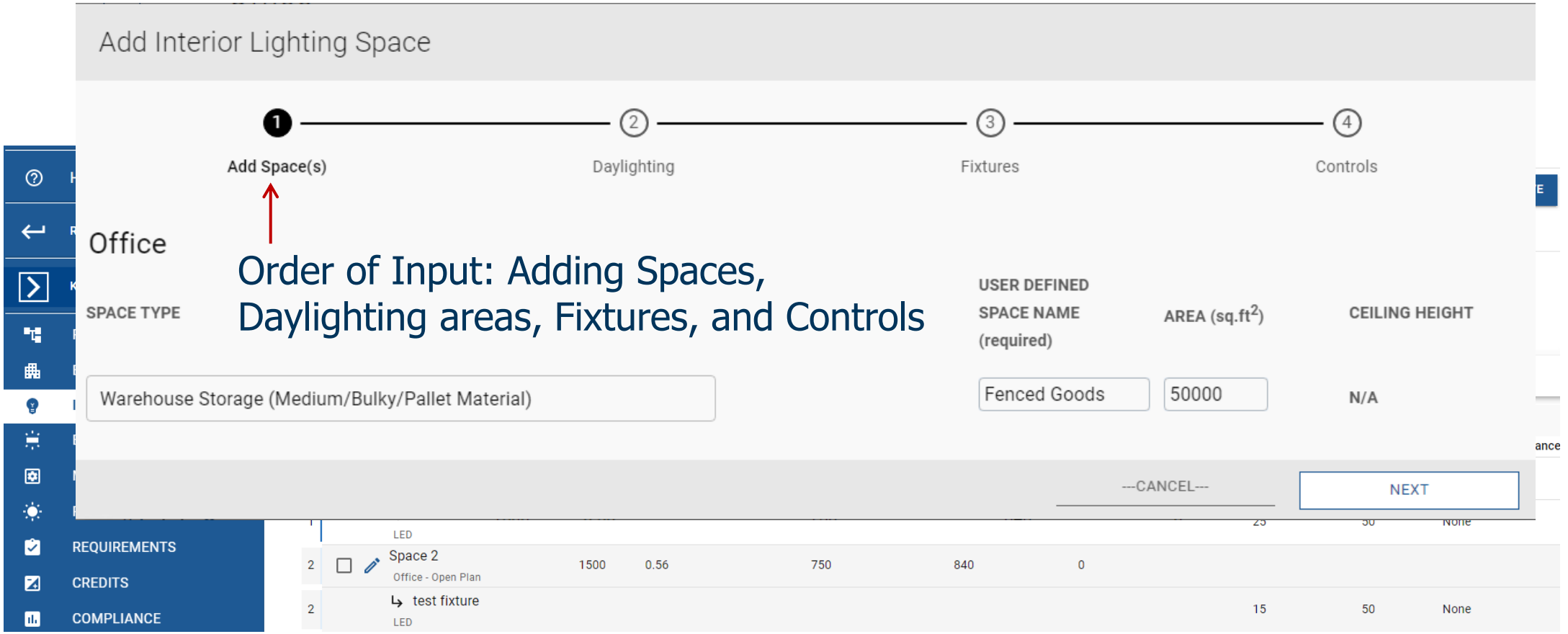
Interior Lighting

Interior lighting is specified in four steps: Adding Spaces, Daylighting areas, Fixtures, and Controls



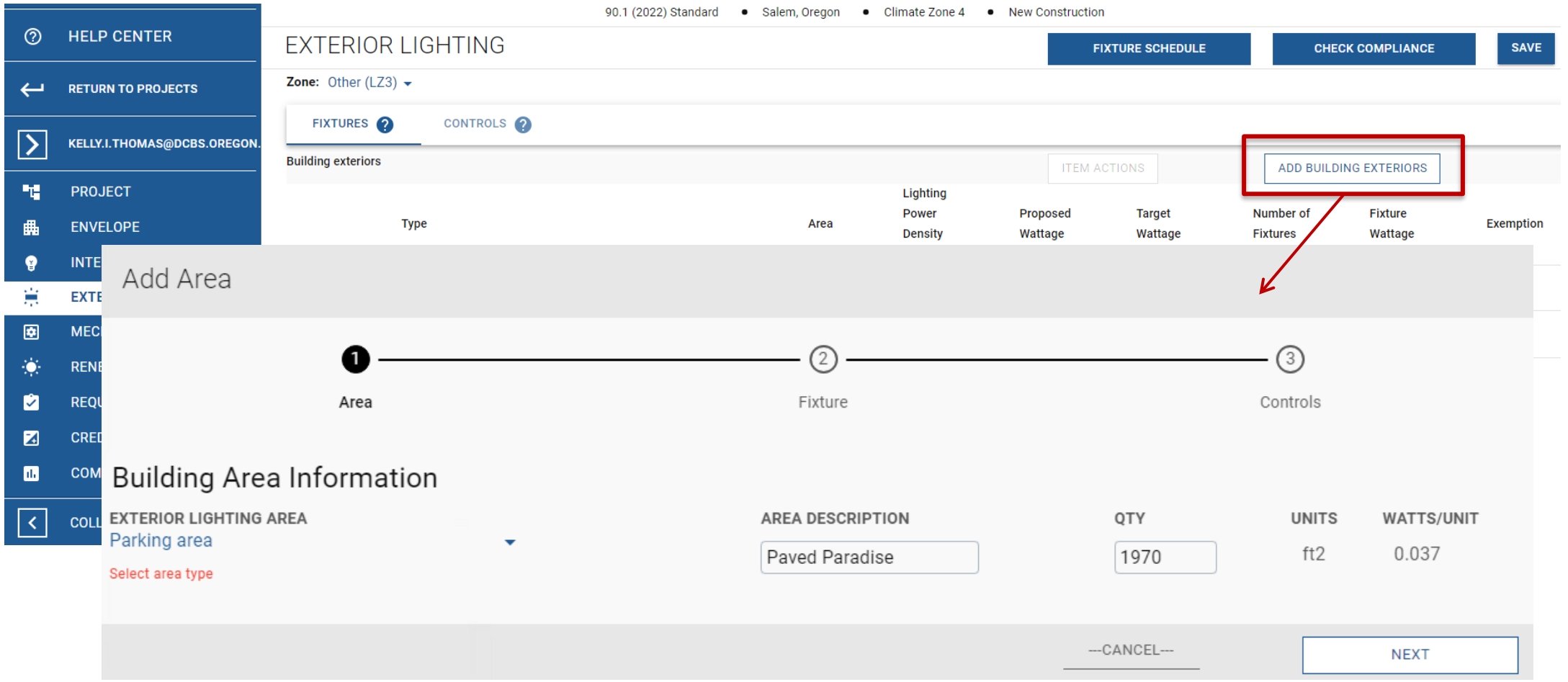
NEW COM*check Web* Basics

Interior Lighting "Pop-Up" Menu



NEW COM*check Web* Basics

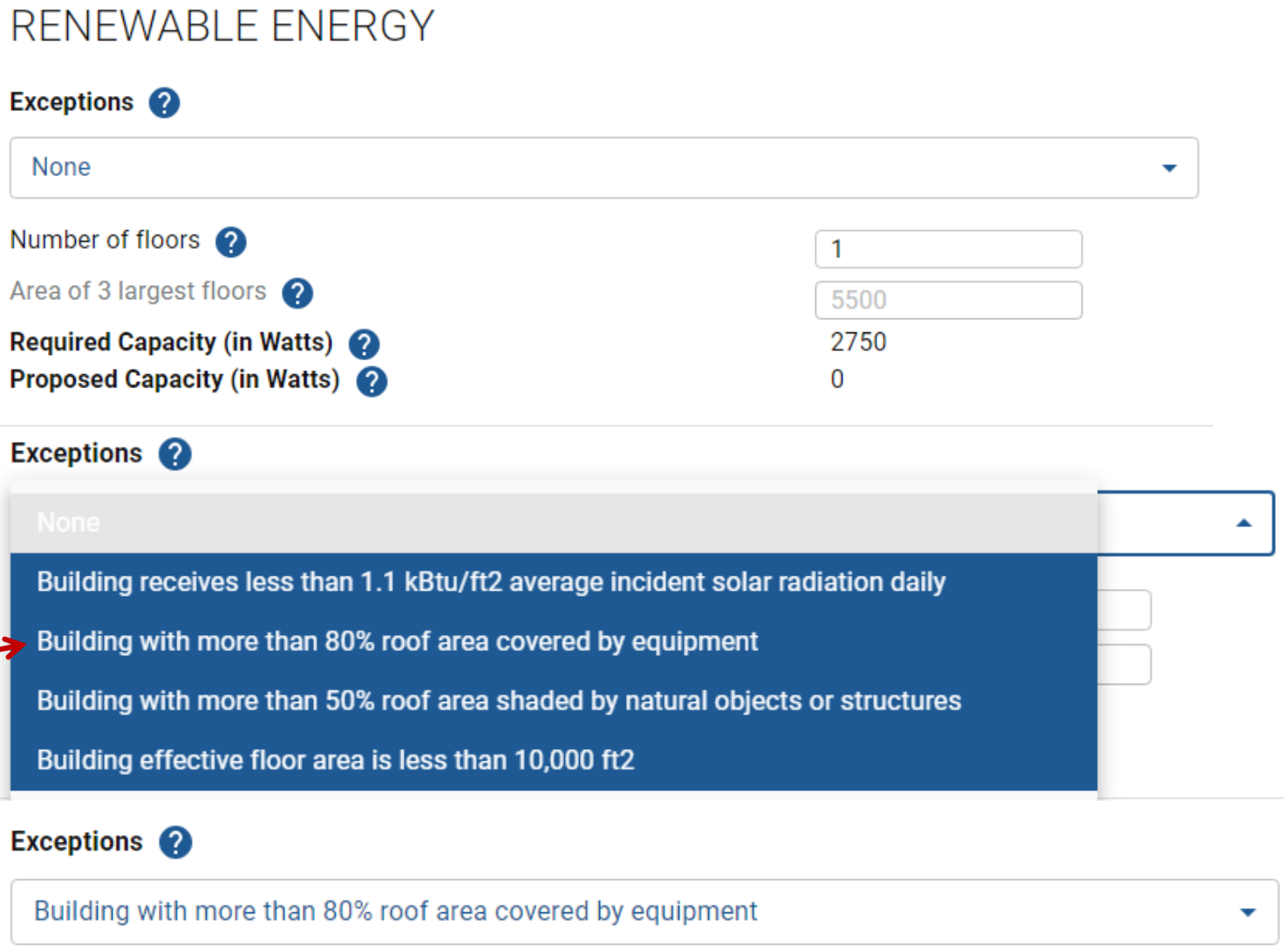
Exterior Lighting



Renewable Energy - ***Special Instructions***

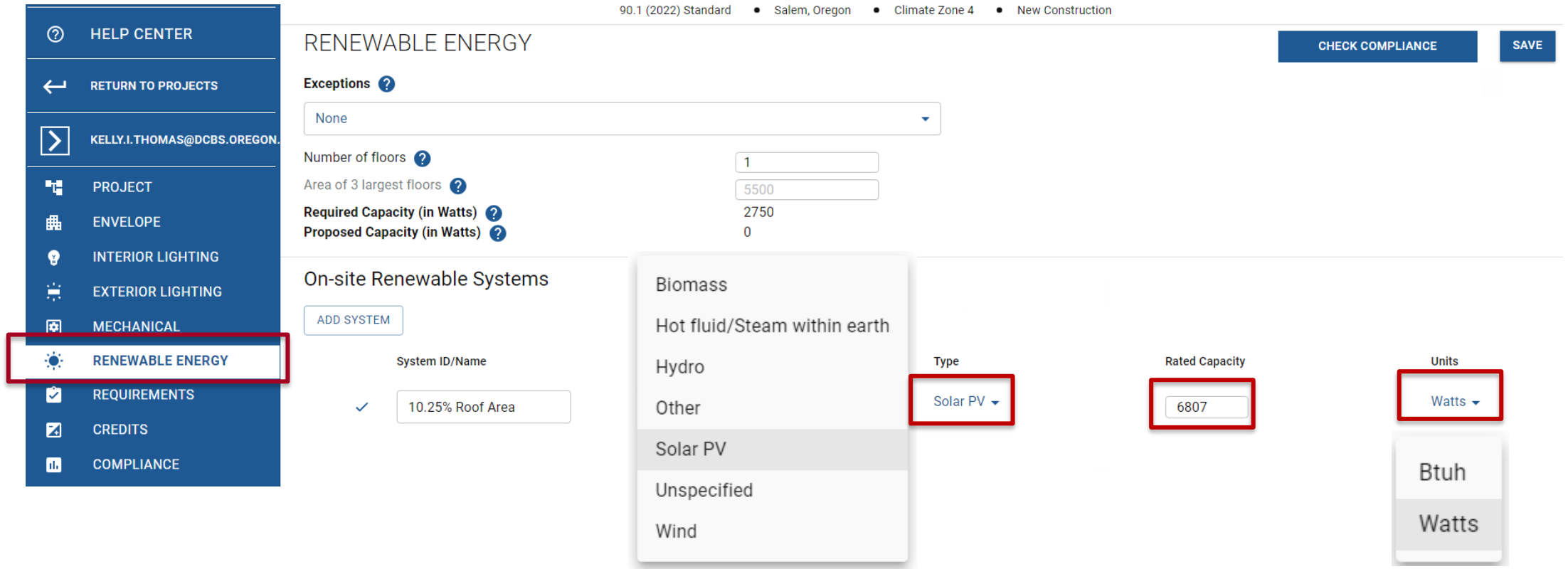
To Align with Oregon's "Adjusted AEC's"

Designer should select the "*80% Roof Area*" exception



NEW COM*check Web* Basics

Renewable Energy



When installing renewables indicate system specifics

NEW COM*check Web* Basics

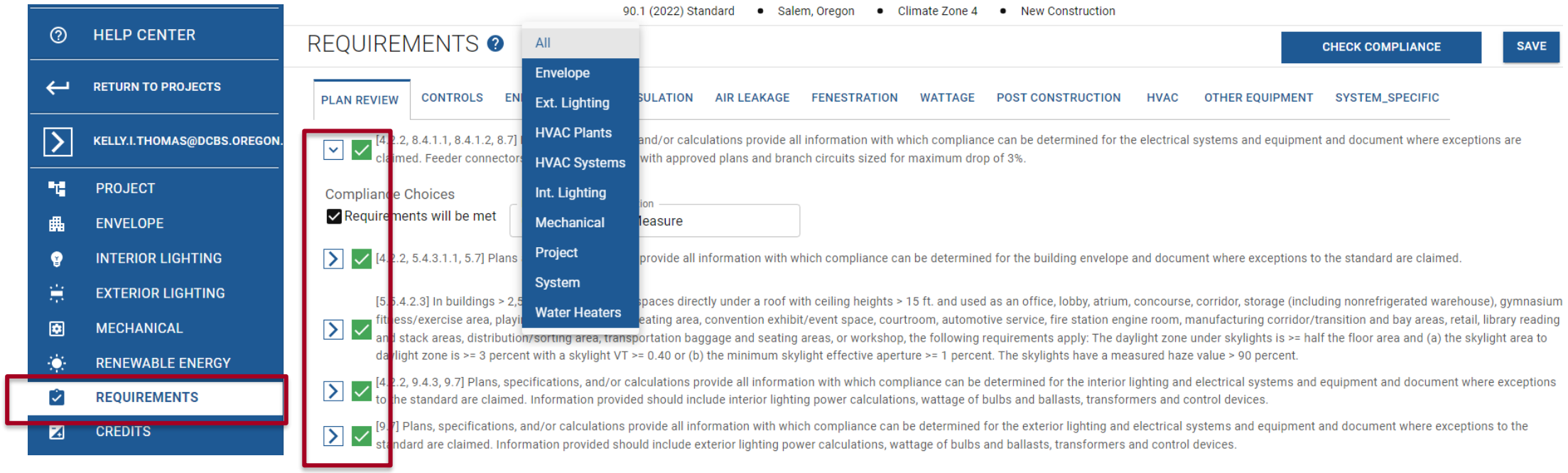
Requirements Tab

- For *each* requirement, the user
  - Chooses a "compliance option"
    - Requirement will be Met, or
    - Exempt or Exceptions, or
    - Requirement is Not Applicable or Requirement Does Not Apply
  - Notes how compliance for applicable requirements are documented
  - *All Plans reference page/section are required to be filled out.*
- This information is shown on the report in the "Comments/ Assumptions" column of the Inspection Checklist
- *All requirements must be addressed, or no compliance can be determined*

NEW COM*check Web* Basics

Requirements Tab

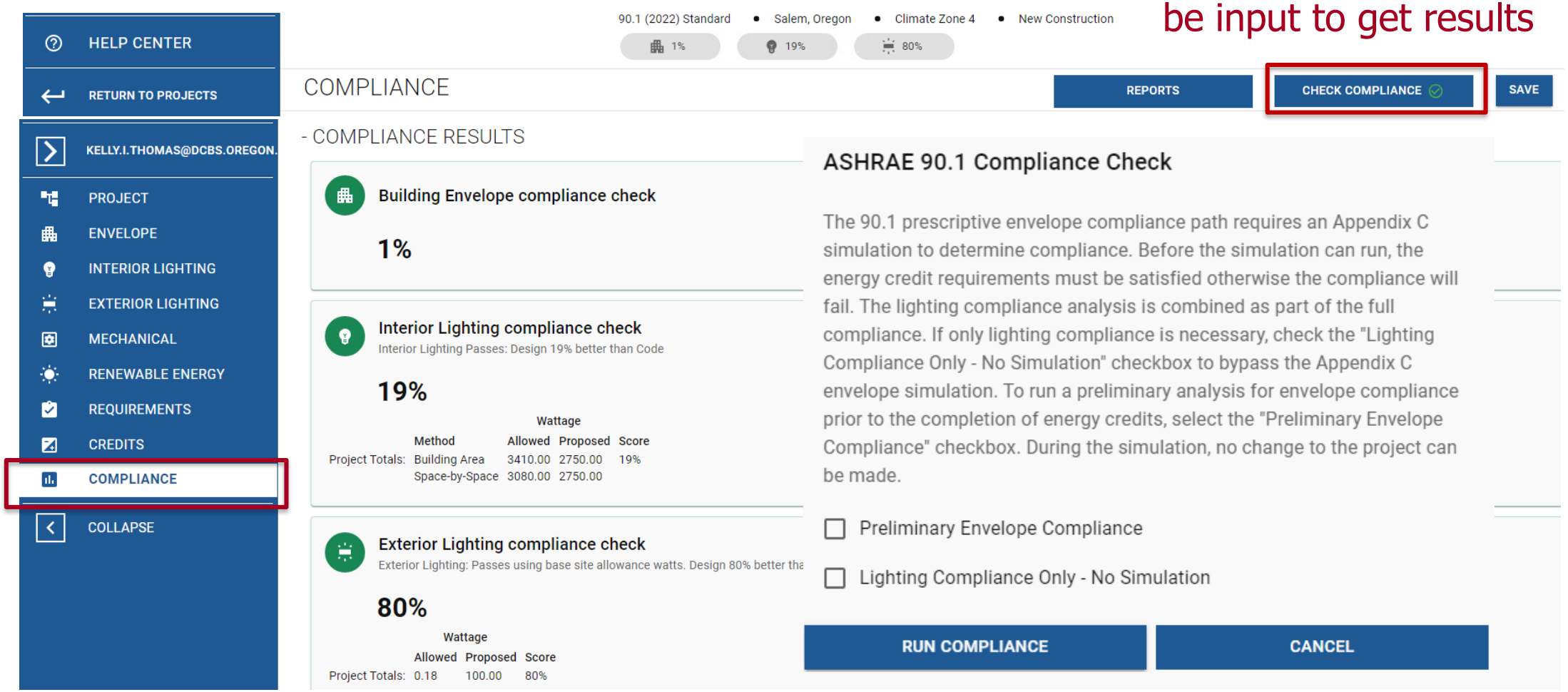
- User should be aware of applicable mandatory requirements and addresses each in the software. Green mark should show.
  - Provides better documentation for code officials



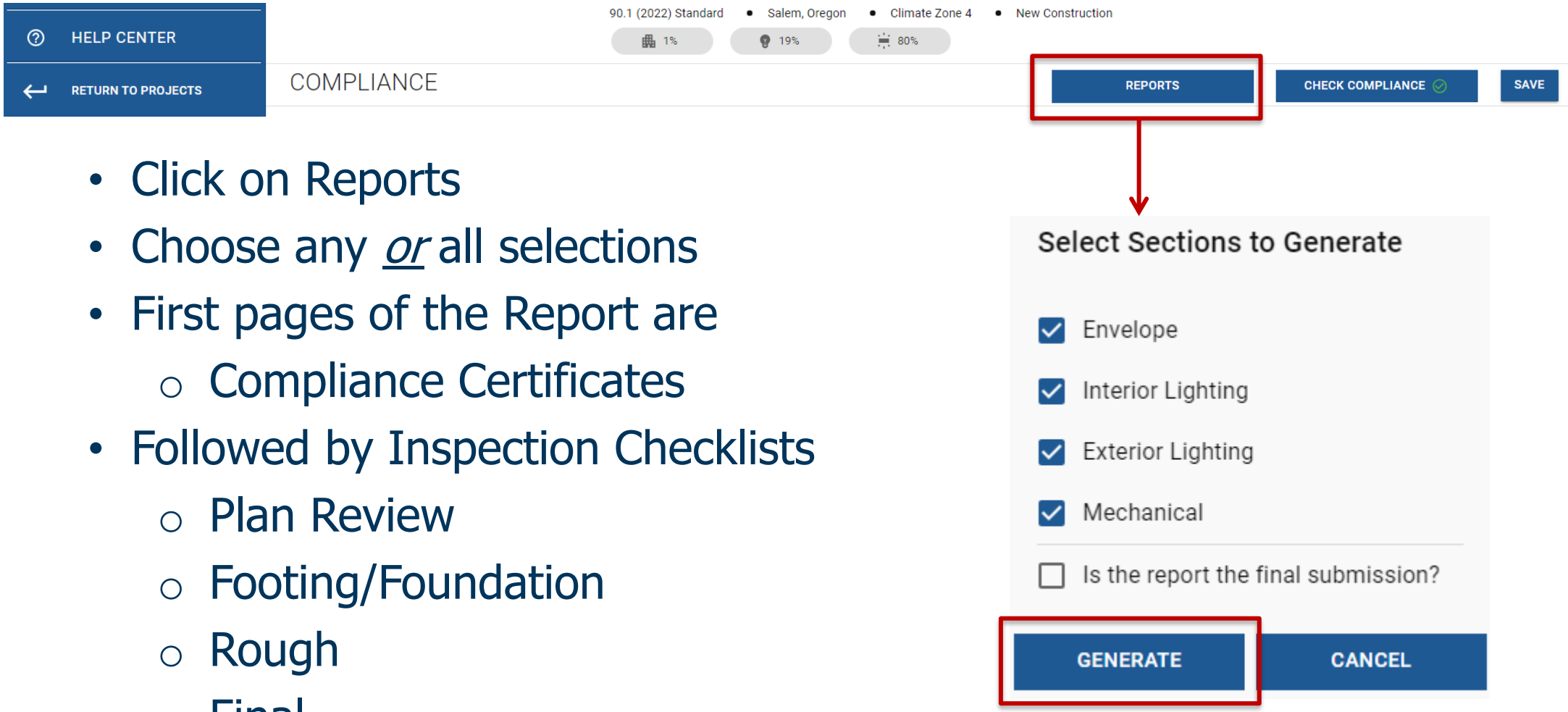
NEW COM*check Web* Basics

Compliance

Minimum AEC's ***MUST*** be input to get results



NEW COM*check Web* - Reports



- Click on Reports
- Choose any *or* all selections
- First pages of the Report are
  - Compliance Certificates
- Followed by Inspection Checklists
  - Plan Review
  - Footing/Foundation
  - Rough
  - Final

NEW COM*check Web* - Reports

Each report is signed by the responsible party

Envelope PASSES: Design 1% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 90.1 (2022) Standard requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

Interior Lighting PASSES: Design 11% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2022) Standard requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

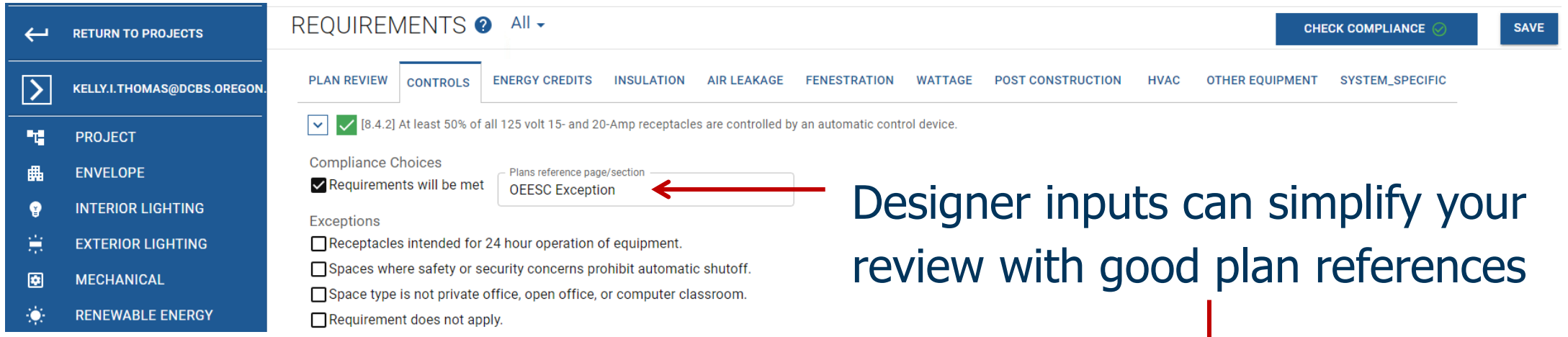
Name - Title _____ Signature _____ Date _____

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2022) Standard requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

NEW COM*check Web* - Reports



Designer inputs can simplify your review with good plan references

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10]²	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** OEESC Exception

COMcheck has built-in, *color-coded priority guides* for where to focus first

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

NEW COM*check Web* - Reports

COM*check* Software Version COMcheckWeb

Envelope Compliance Certificate

Project Information

Energy Code:	90.1 (2022) Standard
Project Title:	SAMPLE Small Office Salem OR
Location:	Salem, Oregon
Climate Zone:	4c
Project Type:	New Construction
Vertical Glazing / Wall Area:	27%
Performance Sim. Specs:	EnergyPlus 8.1.0.009 (EPW:)
All Electric:	true
Is Renewable:	false
Has Battery:	false
Has Charger:	false
Has Heat Pump:	true

DRAFT

Code Path

Climate Zone

Window-Wall Ratio

Has PV?

NEW COM*check Web* - Reports

Efficiency Packages

Description	Credit
5% heating efficiency improvement	7.50
5% cooling efficiency improvement	8.57
Heat pump water heater	4.00
Reduced lighting power	18.00
HVAC Load Management	14.00

Credits: 43.0 Required 52.1 Proposed

Credits Taken, Required, and Proposed

Renewables *Remember*, to align with OEESC AEC's…Select "80% Roof Area" option

Renewables Passes: Building with more than 80% roof area covered by equipment

Building Area	Floor Area
1-Office (Office) : Nonresidential	5500

NEW COM*check Web* - Reports

COM*check* Software Version 4.1.5.2

Envelope Compliance Certificate

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Non-Wood Joist/Rafter/Truss, [Bldg. Use 1 - Office]	6112	20.0	0.0	0.056	0.021
Skylight 1: Metal Frame, Double Pane, Perf. Specs.: Product ID FA-11102, SHGC 0.80, VT 0.80, [Bldg. Use 1 - Office] (b)	112	---	---	0.500	0.500
Floor 1: Slab-On-Grade:Unheated, Vertical 2 ft., [Bldg. Use 1 - Office] (c)	180	---	10.0	0.540	0.520
NORTH					
Exterior Wall 1: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	5.0	10.0	0.067	0.104
Door 1: Glass (> 50% glazing):Metal Frame, Perf. Specs.: Product ID FA-1152, SHGC 0.30, VT 0.70, [Bldg. Use 1 - Office] (b)	42	---	---	0.500	0.680
Window 1: Metal Frame, Double Pane with Low-E, Perf. Specs.: Product ID FA-1152, SHGC 0.63, VT 0.70, [Bldg. Use 1 - Office] (b)	1500	---	---	0.600	0.380
Window 2: Metal Frame, Double Pane, Perf. Specs.: Product ID FA-1152, SHGC 0.72, VT 0.60, [Bldg. Use 1 - Office] (b)	56	---	---	0.700	0.380
Door 2: Insulated Metal, Non-Swinging, [Bldg. Use 1 - Office]	288	---	---	0.140	0.310
Door 3: Insulated Metal, Swinging, [Bldg. Use 1 - Office]	40	---	---	0.200	0.370
EAST					
Exterior Wall 2: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	8.0	5.0	0.095	0.104
SOUTH					
Exterior Wall 3: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	8.0	5.0	0.095	0.104
WEST					
Exterior Wall 4: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	1000	19.0	0.0	0.094	0.064

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.

(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.

Envelope FAILS: Design 6% worse than code

Review BUDGET vs. PROPOSED values

Design *FAILS*.
MUST revise or use Performance Path (Section 12 or Appendix G)

NEW COM*check Web* - Reports

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Non-Wood Joist/Rafter/Truss, [Bldg. Use 1 - Office]	6112	40.0	0.0	0.033	0.021
Skylight 1: Metal Frame, Double Pane, Perf. Specs.: Product ID FA-11102, SHGC 0.80, VT 0.80, [Bldg. Use 1 - Office] (b)	112	---	---	0.500	0.500
Floor 1: Slab-On-Grade:Unheated, Vertical 2 ft., [Bldg. Use 1 - Office] (c)	180	---	10.0	0.540	0.520
NORTH					
Exterior Wall 1: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	11.0	10.0	0.063	0.104
Door 1: Glass (> 50% glazing):Metal Frame, Perf. Specs.: Product ID FA-1152, SHGC 0.30, VT 0.70, [Bldg. Use 1 - Office] (b)	42	---	---	0.500	0.680
Window 1: Metal Frame, Double Pane with Low-E, Perf. Specs.: Product ID FA-1152, SHGC 0.63, VT 0.70, [Bldg. Use 1 - Office] (b)	1500	---	---	0.600	0.380
Window 2: Metal Frame, Double Pane, Perf. Specs.: Product ID FA-1152, SHGC 0.72, VT 0.60, [Bldg. Use 1 - Office] (b)	56	---	---	0.700	0.380
Door 2: Insulated Metal, Non-Swinging, [Bldg. Use 1 - Office]	288	---	---	0.140	0.310
Door 3: Insulated Metal, Swinging, [Bldg. Use 1 - Office]	40	---	---	0.200	0.370
EAST					
Exterior Wall 2: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	11.0	10.0	0.063	0.104
SOUTH					
Exterior Wall 3: Solid Concrete:8" Thickness, Medium Density, Furring: Metal, [Bldg. Use 1 - Office]	6000	11.0	10.0	0.063	0.104
WEST					
Exterior Wall 4: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	1000	19.0	0.0	0.094	0.064

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.

(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.

Envelope PASSES: Design 4% better than code

Should match CD's & Specs

Design PASSES

NEW COM*check Web* - Inspection Checklist

Plan Review

- Plans and specs match COM*check*, calcs provided which can be used to determine compliance

Footing/Foundation Inspection

- Installed below-grade and slab insulation matches R-values, exterior insulation protected, etc.

Framing/Rough-in Inspection

- Window/Wall U-factors match documents, components labeled, air barrier constructed

Mechanical Rough-in Inspection

- HVAC efficiencies match plans, controls provided/installed, heat recovery installed

Electrical Rough-in Inspection

- Interior/Exterior lighting controls installed in compliance with documents, special lighting addressed

Insulation Inspection

- All above-grade insulation matches documents, installed correctly

Final Inspection

- HVAC and lighting controls configured correctly, installation matches documents, etc.

NEW COM*check Web* - Inspection Checklist

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 90.1 (2022) Standard

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 5.4.3.1.1, 5.7 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** x
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** OEESC Exception

Look for *5 additional* AEC's documented on plans and ensure new credit total is met.

NEW COM*check Web* - Inspection Checklist

8.4.3 [EL11][2]	New buildings have electrical energy use measurement devices installed. Where tenant spaces exist, each tenant is monitored separately. In buildings with a digital control system the energy use is transmitted to to control system and displayed graphically.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Buildings 25,000 ft2.
9.4.1.1 [EL1][2]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** x
9.4.1.1 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Remote locations permitted for safety or security if used with a clearly labeled indicator pilot light.
6.4.3.5 [FI5][3]	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Heat pumps regulated by and meeting NAECA requirements and using internal electric resistance heating.

Less than 25k SF. No need to have energy monitoring, so no need to take the exception requiring extra AECs.

NEW COM*check Web* - Inspection Checklist

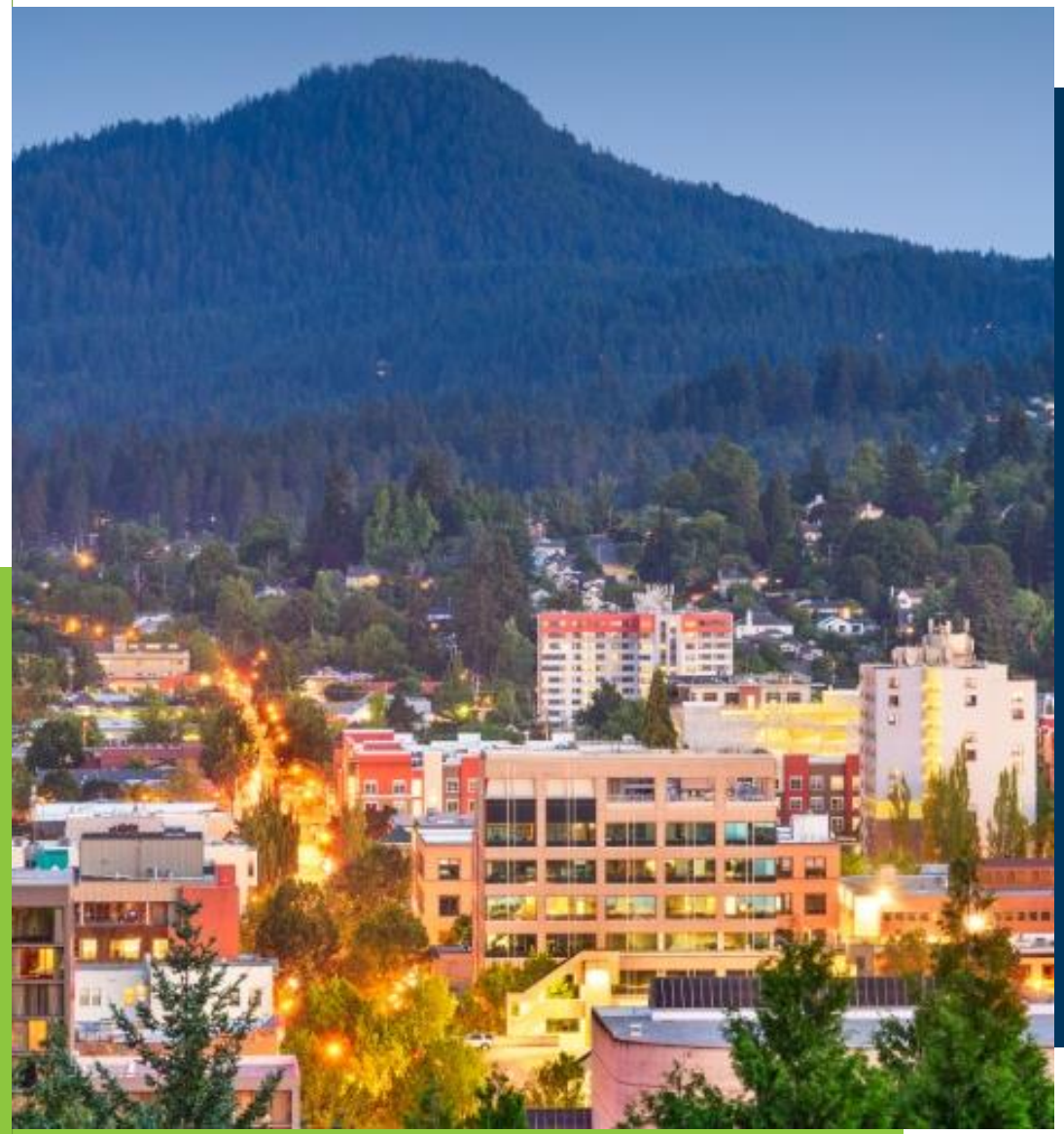
Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [FI1][1]	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
11.5.2.3.1 b [FI53][2]	W01: Heat-Pump Water Heater energy credit measure requires that a HPWH serves >= 30% of service water heating requirements without supplemental heating.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** x *See the Mechanical Systems list for values.*
11.5.2.6 [FI65][2]	R01: On-Site Renewable Energy energy credit measure requires the capacity of on-site renewable energy systems in addition to the requirements of Section 10.5.1.1 shall be not less than 0.1 W/ft2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

NEW COM*check Web* – Deferred Submittals

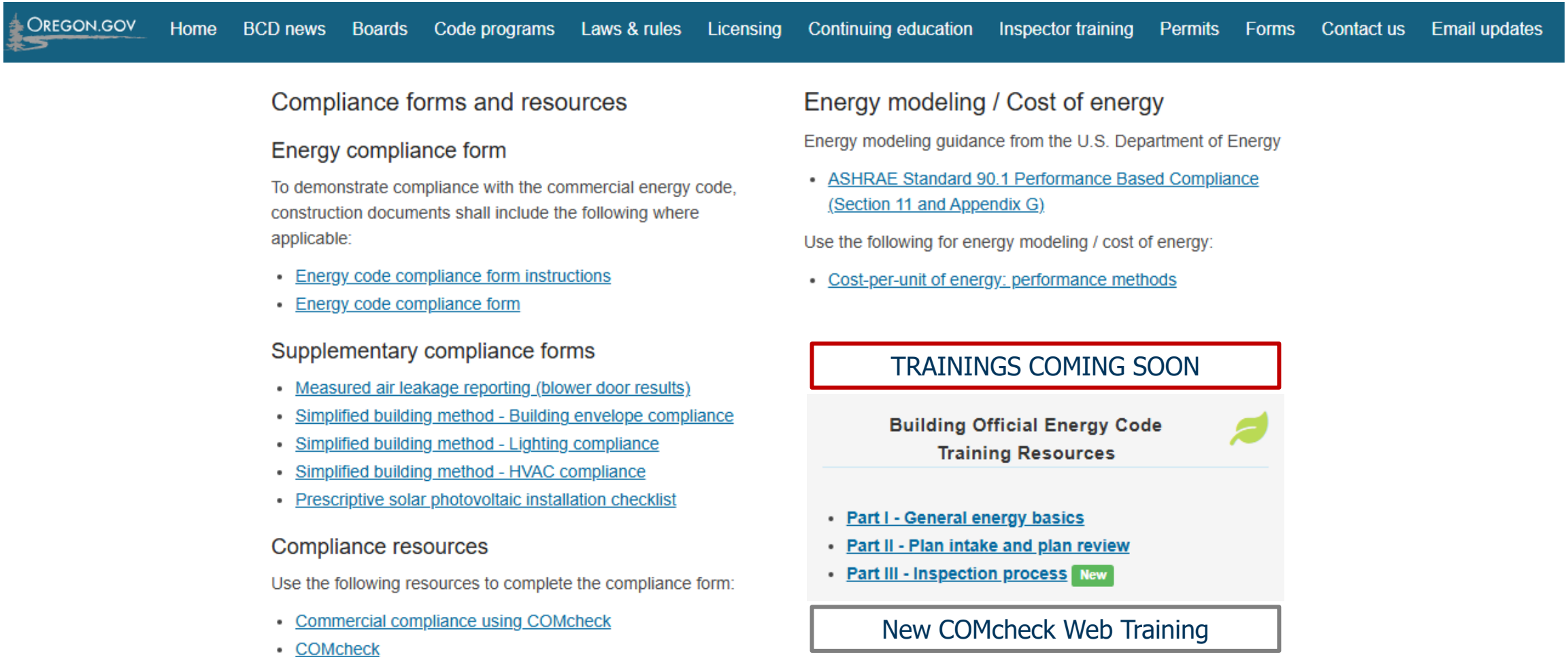
An Authority Having Justisdiction (AHJ) which allows Deferred Submittals will need to address *when* and *how* the AEC's are applied in COM*check Web*

BCD is working on forms relative to deferred submittals. Each AHJ may implement their own policy relative to Deferred Submittals



Additional Training Resources

BCD Commercial Energy Code Resources



https://www.oregon.gov/bcd/codes-stand/Pages/energy-residential-compliance.aspx

ODOE Energy Code Resources

OREGON.GOV | HOME | RESOURCES | INCENTIVES | DATA & REPORTS | GET INVOLVED | ABOUT US

To build smart and conserve energy, Oregon has developed energy codes and standards for buildings.

Oregon's building codes are administered by the state Building Codes Division, including the:

- 2025 Oregon Energy Efficiency Specialty Code (OEESC): The 2025 OEESC, based on ASHRAE Standard 90.1-2022, became effective on January 1, 2025. This code becomes mandatory after the six-month phase-in period ends on July 1, 2025. More information can be found on the Oregon Building Codes Division Commercial Energy Code page.
- 2023 Oregon Residential Specialty Code (ORSC): Chapter 11 of the ORSC contains the residential building energy provisions. The 2023 ORSC became effective on October 1, 2023, became mandatory on April 1, 2024 after a 6 month phase-in. More information can be found on the Oregon Building Codes Division Residential Energy Code page.

These codes outline energy efficiency requirements for Oregon buildings. The codes cover insulation, equipment, windows, lighting, and much more.

TRAINING RESOURCES

- Commercial Building Codes
- Residential Building Codes
- Residential- Earth Advantage ORSC HVAC Training Slides

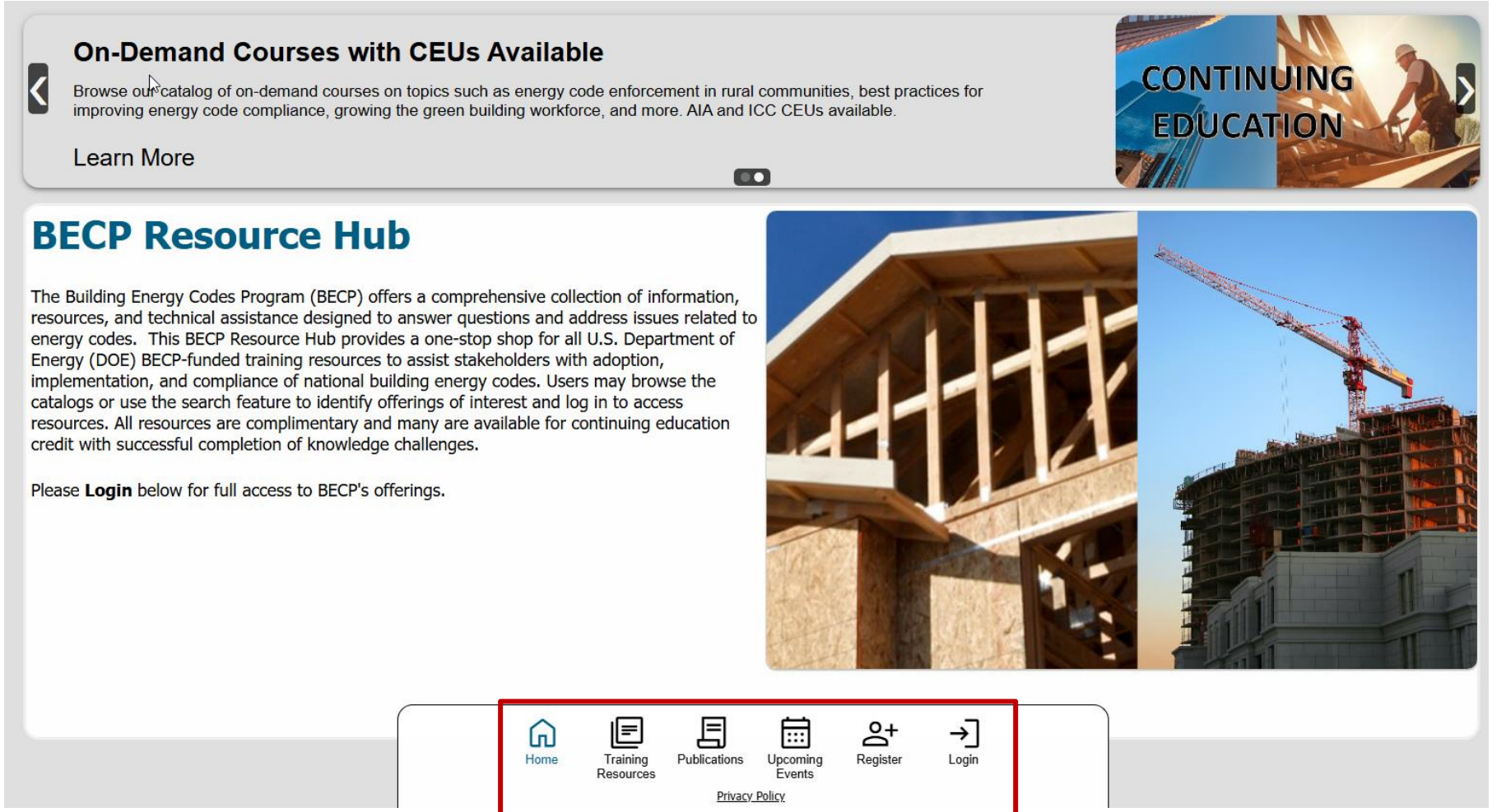
GENERAL RESOURCES

- Oregon Building Codes Division-Energy Code Program
- Oregon Energy Building Code Stakeholder Panel
- Built Environment Efficiency Working Group
- Northwest Energy Efficiency Alliance
- USDOE Energy Code Map
- International Energy Conservation Code
- ASHRAE Standard 90.1

Ask an Energy Code Question Through Our Customer Service Portal

https://www.oregon.gov/energy/energy-oregon/Pages/Energy-Code.aspx

DOE Training Resources



https://training.energycodes.gov/ui/

ASHRAE 90.1 Portal & User Manual

ASHRAE's 90.1 Portal is on hiatus pending a redesign, expansion, and relaunch at an undetermined future date. We look forward to soon providing 90.1 and more to you bigger and better than ever.

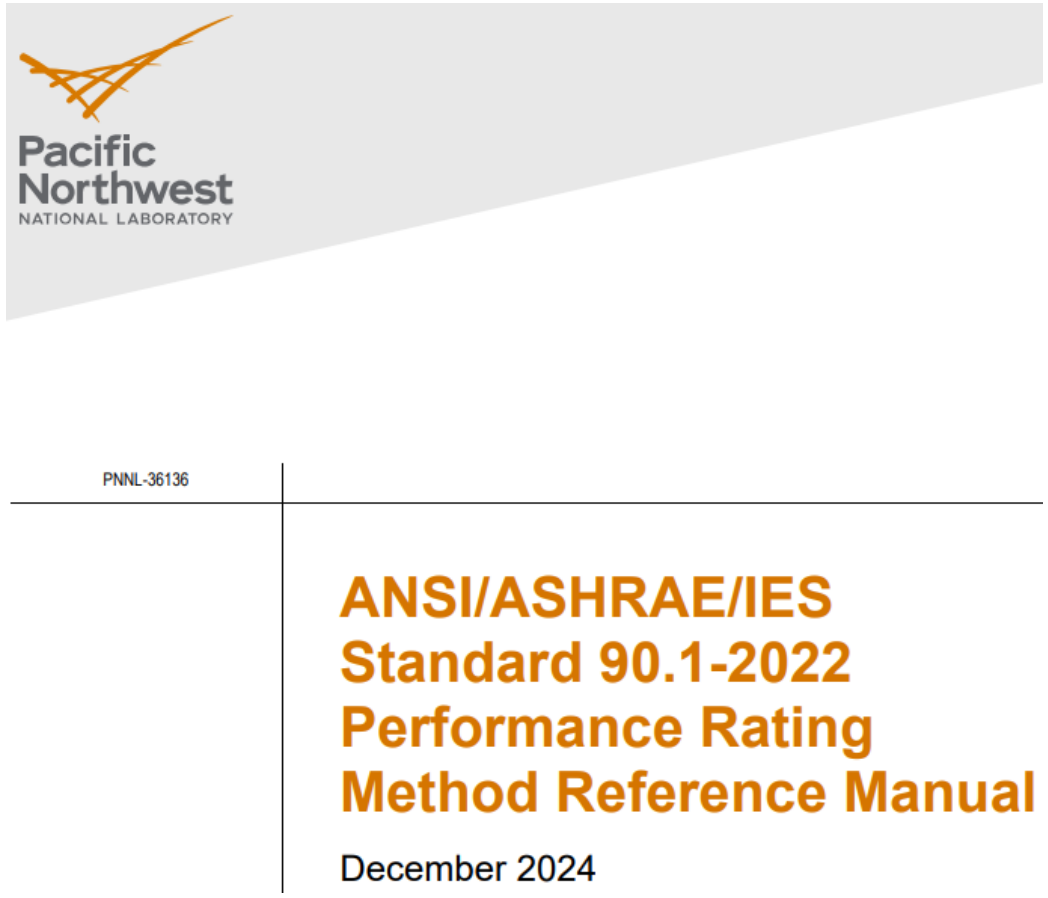
90.1-2022
User's Manual

Status Unknown,
Currently *NOT*
Available for
Purchase

ASHRAE Standard 90.1 User's Manual

Appendix G - Performance Rating Resource

- **90.1-2022** Performance Rating Method Reference Manual
- **Modelers**: Use to build proposed design model
- **Code Officials**: Use to understand modeling requirements and interpretations



https://www.energycodes.gov/sites/default/files/2025-01/PerfRatingMethodRefMan9012022-01152024.pdf

BCD Building Codes Division

Department of Consumer and Business Services

Salem office

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Salem, OR 97304

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503 -378 -4133 (main)

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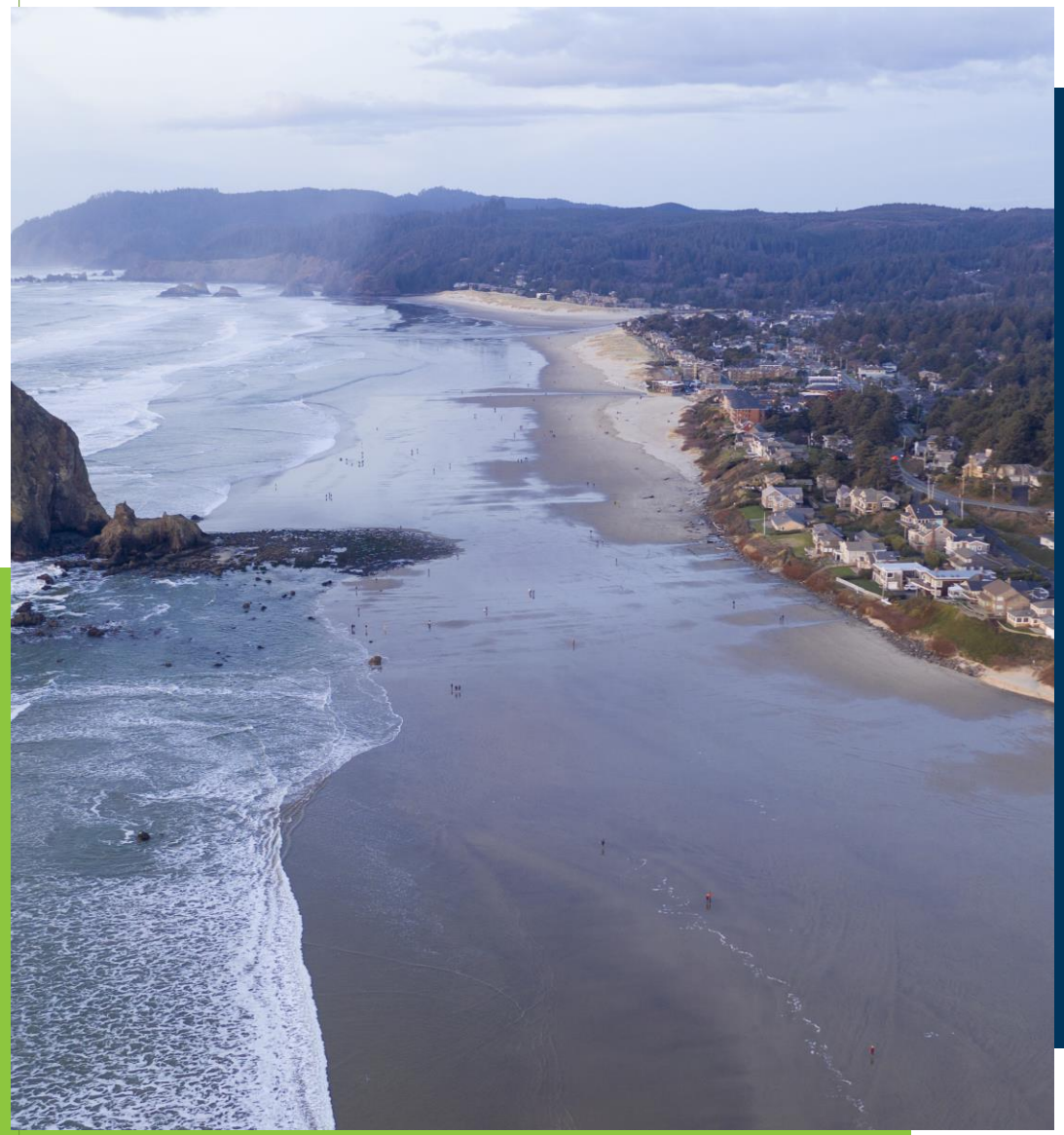

Course Conclusion

THANK YOU