Building Safety Division
City of Bend
(541) 388-5580 ext. 3
building@bendoregon.gov
710 NW Wall Street, Bend OR 97703

This submittal form is to be completed as part of your application with the City of Bend. *Download this form before completing fillable fields,* then upload with your application through the Online Permit Center at www.bendoregon.gov/permitcenter.

2023 RESIDENTIAL CODE ENERGY, LIGHTING EFFICIENCY, MOISTURE CONTENT, AND WHOLE-HOUSE VENTILATION CHECKLIST

Instructions: Select the type of construction. If the project is an addition, select the applicable addition type and enter the selected measures accordingly.

☐ **New Construction.** All conditioned spaces within residential buildings shall comply with Table N1101.1(1) and one additional measure from Table N1101.1(2). New buildings using N1105.3 Exception #3, shall select two additional measures from Table N1101.1(2).

☐ **Additions.** Additions to existing buildings or structures may be made without making the entire building or structure comply if the new additions comply with the requirements of this chapter [see ORSC Section N1101.3].

- ☐ **Large Additions.** Additions that are equal to or more than 600 square feet in area are required to select one measure from Table N1101.1(2).
  Enter the selected Table N1101.1(2) additional measure: _____
- ☐ **Small Additions.** Additions that are less than 600 square feet in area are required to select one measure from Table N1101.1(2) or Table N1101.3
  - ☐ Selected Table N1101.1(2) additional measure _____
  - ☐ Selected Table N1101.3 additional measure _____
- ☐ **Exception:** Additions that are less than 225 square feet in area are not required to comply with Table N1101.1(2) or Table N1101.3.

Note: Depending on the additional measure you have selected, there may be sub-options that you will have to specify. Check the appropriate box, if provided.

Table N1101.1(2), Section N1101.3, Table 1104.8, Section N1104.8, and Section N1105.3 are included on the following pages **(Please check all applicable boxes)**

TABLE N1101.1(2) – ADDITIONAL MEASURES		
1	☐	**High efficiency HVAC system[a]** ☐ Gas-fired furnace or boiler AFUE 94 percent, or ☐ Air-source heat pump HSPF 10.0/14.0 SEER cooling, 8.5 HSPF2/ 15.0 SEER2, or ☐ Ground-source heat pump COP 3.5 or Energy Star rated
2	☐	**High-Efficiency Water Heating System** ☐ Natural gas/propane water heater with minimum 0.90 EUF, or ☐ Electric heat pump water heater with minimum 3.45 UEF, or ☐ Natural gas/propane tankless/instantaneous heater with minimum 0.80 UEF and Drain Water Heat Recovery Unit installed on minimum of one shower/tub-shower
3	☐	**Wall Insulation Upgrade** Exterior walls – U-0.045/R-21 conventional framing with R-5.0 continuous insulation
4	☐	**Advanced Envelope** • Windows – U-0.21 (Area weighted average), and • Flat ceiling[b] – U-0.017/R-60, and • Framed floors – ☐ U-0.026/R-38 or ☐ slab edge insulation to F-0.48 or less (R-10 for 48”; R-15 for 36” or R-5 fully insulated slab)
5	☐	**Ductless Heat Pump** For dwelling units with all-electric heat, provide: • Ductless heat pump of minimum HSPF 10 or HSPF2 9.0 in primary zone replaces zonal electric heat sources, and • Programmable thermostat for all heaters in bedrooms
6	☐	**High efficiency thermal envelope UA[c]** Purposed UA is 8 percent lower than the code UA
7	☐	**2.75 ACH Air Leakage Control and Efficient Ventilation** Achieve a maximum of 2.75 ACH50 whole-house air leakage when third-party tested and provide a whole-house ventilation system including heat recovery with a minimum sensible heat recovery efficiency of not less than 66 percent and total fan efficacy of 1.6 CFM/Watt (combined input for supply and exhaust).

For SI: 1 square foot=0.093m^2, 1 watt per square foot=10.8 W/m^2.

Notes *(superscripts)*

a. Appliances located within the building thermal envelope shall have sealed combustion air installed. Combustion air shall be ducted directly from the outdoors.
b. The maximum vaulted ceiling surface area shall not be greater than 50 percent of the total heated space floor area unless vaulted area has a U-factor no greater than U-0.026.
c. In accordance with Table N1104.1(1), the Proposed UA total of the Proposed Alterative Design shall be a minimum of 8 percent less than the Code UA total of the Standard Base Case.

TABLE N1101.3 SMALL ADDITION ADDITIONAL MEASURES (Select One)		
1	☐	Increase the ceiling insulation of the existing portion of the home as specified in Table N1101.2
2	☐	Replace all existing single-pane wood or aluminum windows to the *U*-factor as specified in N1101.2
3	☐	Insulate the existing floor, crawl space, or basement wall systems as specified in Table N1101.2 and install 100 percent of permanently installed lighting fixtures as CFL, LED or linear fluorescent, or a minimum efficacy of 40 lumens per watt as specified in section N1107.2
4	☐	Test the entire dwelling with a blower door and exhibit no more than 4.5 air changes per hour at 50 Pascals
5	☐	Seal and performance test the duct system
6	☐	Replace existing 80-percent AFUE or less gas furnace with a 94-percent AFUE or greater system
7	☐	Replace existing electric radiant space heaters with a ductless mini split system with a minimum HSPF of 10.0 or HSPF2 of 9.0
8	☐	Replace existing electric forced air furnace with an air source heat pump with a minimum HSPF of 9.5 or HSPF2 of 8.1
9	☐	Replace existing water heater with one of the following: A) Natural gas/propane water heater with minimum UEF 0.90, or B) Electrical heat pump water heater with minimum 3.45 UEF

N1104.8 Air Leakage. The building thermal envelope shall be constructed to limit air leakage in accordance with this section.

TABLE N1104.8 AIR BARRIER INSTALLATION AND AIR SEALING REQUIREMENTS	
General Requirements	A continuous air barrier shall be installed in alignment with the building thermal envelope.
	Breaks or joints in the air barrier shall be sealed.
Ceiling/Attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed.
	Access openings, drop-down stairs, or knee wall doors to unconditioned attic spaces shall be gasketed and sealed.
Walls	The junction of the foundation and sill plate shall be sealed.
	The junction of the top plate and the top of walls shall be sealed between wall cavities and windows or door frames
	All penetrations or utility services through the top and bottom plates shall be sealed.
	Knee walls shall be sealed.
Windows, skylights and doors	The space between framing and skylights, and the jambs of windows and doors shall be sealed.
Rim/band joists	Rim/band joists shall be a part of the thermal envelope and have a continuous air barrier.
Floors Including cantilevered floors and floors above garages	The air barrier shall be installed at any exposed edge of insulation
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.

Shafts, penetrations	Duct shafts, utility penetrations and flue shafts opening to exterior or unconditioned space shall be sealed.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.
Shower/tub on exterior walls	The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.
HVAC register boots	HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.

INSTALLATION OF DUCTS

N1105.3 Installation of ducts and air handling equipment. For new construction and additions, all new duct systems and air handling equipment and appliances shall be located fully within the building thermal envelope. Exceptions:

1. Ventilation intake ductwork and exhaust ductwork.
2. Up to 10ft of HVAC system ductwork.
3. Where two measures are selected for compliance from Table N1011.1(2) and HVAC supply and return ductwork is installed in accordance with either Section N1105.3.1, N1105.3.2 or N1105.3.3.

N1105.3.1 Deeply buried duct in attic. Ducts deeply buried in attic insulation shall be in accordance with all of the following when using Section N1105.3, Exception 3:

1. Insulation shall be installed to fill gaps and voids between the duct and the ceiling, and a minimum of R19 insulation shall be installed above the duct between the duct and unconditioned attic.
2. All ductwork in the attic shall be insulated to R-8.
3. Insulation depth marker flags shall be installed on the ducts every 10 feet (3048 mm) or as approved by the building official.

Exception: HVAC ductwork shall be permitted to be located outside of the building thermal envelope where the duct is insulated to a minimum of R-27 with a Class II or III vapor retarder.

N1105.3.2 Ducts in unvented crawlspace. Ducts located in unvented crawlspace shall be in accordance with all of the following when using Section N1105.3, Exception 3:

1. In addition to meeting Section R408.3, all seams of the vapor barrier shall overlap a minimum of 12 inches (305 mm) and be sealed with tape or other approved method.
2. All ductwork in the crawlspace shall be insulated to R-8.
3. The floor between the crawlspace and the dwelling shall be insulated with minimum R-30.

N1105.3.3 Deeply buried duct in vented crawlspace. Ducts deeply buried in crawlspace insulation shall be in accordance all of the following when using Section N1105.3, Exception 3:

1. Insulation shall be installed to fill gaps and voids between the duct and the floor above, and a minimum of R-19 insulation shall be installed below the duct and between the duct and unconditioned crawlspace.
2. All ductwork in the crawlspace shall be insulated to R-8.

Exception: HVAC ductwork shall be permitted to be located outside of the building thermal envelope where the duct is insulated to a minimum of R-27 with a Class II or III vapor retarder.

To comply with this requirement *(Please select all applicable boxes):*

- ☐ Ducts will be installed in the conditioned space
- ☐ No heating or cooling ducts are being installed
- ☐ Ducts in unconditioned attic will have R-19 above and comply with requirements for deeply buried ducts per N1105.3.1
- ☐ Under-floor space will be conditioned per N1105.3.2 and meet requirements of R408.3 by (choose 1):
  - ☐ Continuously Operated Mechanical Exhaust (Required C.F.M. _____) or
  - ☐ Conditioned Air Supply (Required C.F.M. _____)
- ☐ Under-floor space will not be conditioned and ducts will have R-19 insulation installed below duct per N1105.3.3
- ☐ Other method will be used for heating and cooling ducts not in conditioned space. Please specify:

MECHANICAL WHOLE-HOUSE VENTILATION SYSTEM (WHV)

M1505.4.3 Mechanical ventilation rate. The whole-house mechanical ventilation system shall provide outdoor air at a continuous rate not less than that determined in accordance with: (*Choose one*)

- ☐ Not less than that determined by Equation 15-1. Ventilation rate in cubic feet per minute = (0.01 × total square foot area of house) + [7.5 × (number of bedrooms + 1)] (Equation 15-1)
  (0.01x _____) + [7.5 x (_____)] = _____CFM

OR

- ☐ Table M1505.4.3(1)

Section 1505.4. Balanced* WHV is provided with a minimum base C.F.M. rate of _____from Table M1505.4.3(1). If using an intermittent run-time factor from table M1505.4.3(2), enter it here: _____ and multiply run-time factor by base C.F.M. rate to determine calculated C.F.M. rate. Enter calculated C.F.M. here: _____

***** Balanced system shall have supply and exhaust rates within a 10% margin

TABLE M1505.4.3(1)
CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS

DWELLING UNIT FLOOR AREA (sq ft)	NUMBER OF BEDROOMS				
	0-1	2-3	4-5	6-7	>7
	Airflow in CFM				
< 1,500	30	45	60	75	90
1,501-3,000	45	60	75	90	105
3,001-4,500	60	75	90	105	120
4,501-6,000	75	90	105	120	135
6,001-7,500	90	105	120	135	150
>7,500	105	120	135	150	165

For SI: square foot = 0.0929m^2, 1 cubic foot per minute = 0.0004719 m^3/s.

TABLE M1505.4.3(2)
INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS [a, b]

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor [a]	4	3	2	1.5	1.3	1.0

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.
b. Extrapolation beyond the table is prohibited.

☐ Using M1505.4.3 exception 1 for 30% reduction to required ventilation rate.
(Required ventilation rate from above) x (0.70) = (Total reduced ventilation required)
(_____CFM) x (0.70) = (_____ CFM).

To use M1505.4.3 exception 1, both of the following must be met:
a. A ducted system supplies ventilation air directly to each bedroom and to one or more of the following rooms: Living room, dining room, or kitchen
b. The whole-house ventilation system is a balanced ventilation system.

HIGH EFFICIENCY LIGHTING

Section N1107.2. All permanently installed lighting fixtures shall be high efficiency light sources.
Exception: Two permanently installed lighting fixtures are not required to be high-efficiency light sources when controlled by a dimmer or automatic control.

To conform to the 2023 Oregon Residential Specialty Code (ORSC), Section N1107, I am notifying the Building Official that I am aware of the high-efficiency lighting requirement of ORSC Section N1107.2 and have taken steps to meet this code requirement.

Printed Name _____ Signature _____ Date _____

MOISTURE CONTENT

Section R318.2 Moisture Content. Prior to the installation of interior finishes, the building official shall be notified in writing by the general contractor that all moisture-sensitive wood framing members used in construction have a moisture content of not more than 19 percent of the weight of dry wood framing members.

To conform to the 2023 Oregon Residential Specialty Code (ORSC), Section R318.2, I am notifying the Building Official that I am aware of the moisture content requirement of ORSC Section R318.2 and have taken steps to meet this code requirement.

Printed Name _____ Signature _____ Date _____

Accommodation Information for People with Disabilities
To obtain this information in an alternate format such as Braille, large print, electronic formats, etc., please contact the Building Safety Division at building@bendoregon.gov or 541-388-5580 extension 2. Relay Users Dial 7-1-1.