Frequently Asked Questions

Q I'm adding a single room. Do I need to make my entire building comply with the energy code?

A Only areas of construction must meet the code.

Q How do I show compliance for site-built windows?

A All windows must show proper National Fenestration Rating Council (NFRC) or default labeling until the building inspector examines and verifies compliance with code. Only decorative or unique architectural feature glazing less than 1 percent of the heated space-floor area is exempt.

Q What is "advanced framing" for walls?

A Advanced framing is an optional construction method that provides higher insulation value than standard wall construction. Walls are framed with 2X studs 24 inches on center. Full insulation must be provided at corners, intersections and headers.

Q Can I use metal studs instead of wood?

A Yes, but not easily. The code is based on the thermal performance of wood studs. Because metal studs conduct heat much faster, you need to provide calculations demonstrating compliance with code. You generally need to put a 1 $^{1}/_{2}$-inch thick layer of continuous rigid foam insulation outside the frame wall to meet code requirements.

Find Out More

This brochure is not intended to replace the code. Additional information is available at your local library, technical bookstore or from the following organizations:

Copies of code:
Oregon Building Officials Association
Phone: (503) 873-1157
Fax: (503) 373-9389

Technical support:
Oregon Office of Energy
625 Marion St. NE, Salem, OR 97310
Phone: (503) 378-4040 or 1-800-221-8035
Fax: (503) 373-7806
www.energy.state.or/codehm.htm

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Oregon Residential Energy Code

Construction & Remodeling

2002 Code

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Building or remodeling

a home can be a complicated process. Planning and detail work can avoid delays that may occur if a project fails to meet state or local codes. This brochure can help you design your residential building to pass the design and inspection process more easily.

What Is the Energy Code?

The Residential Energy Code is part of the Oregon One- and Two-Family Dwelling Code (Chapter 13 of the Oregon Structural Specialty Code). It applies to all construction, alterations and additions to buildings classified as one- and two-family dwellings, hotels, motels, apartment houses and boarding houses three stories or less.

The Oregon Residential Energy Code was significantly revised in 1992. The code requires residential building design to take into account the cost of heating and to incorporate a minimum level of cost-effective, energy-saving features.

The cost of the energy-saving features — an estimated $10 to $20 added to the monthly mortgage on average — is more than offset by lower energy bills. Buyers of homes built to the 1992 energy code may be eligible for a 2 percent stretch in the debt-to-income ratio to cover the added mortgage cost.

Know the Code

You can comply with the Oregon Residential Energy Code by following one of ten paths. Each path has its own thermal performance requirements for building envelope components (walls, windows, etc.). Path 1 is used in 90 percent of residential construction. Other paths are variations of path 1. Most are equal to path 1 in thermal performance.

If your building does not meet one of the ten prescriptive paths, you can use a special option that allows trade-offs between components to develop your own custom path. For example, you can use better windows (such as Class 30) to compensate for less wall insulation than code requires. To apply for such allowances, you must do some calculations using Table C401.1(2) (Res.) of the Oregon One- and Two-Family Dwelling Code or Table 13-B (commercial) of the Oregon Structural Specialty Code. A special guide available at your building jurisdiction or the Oregon Office of Energy shows how to use this table.

Construction

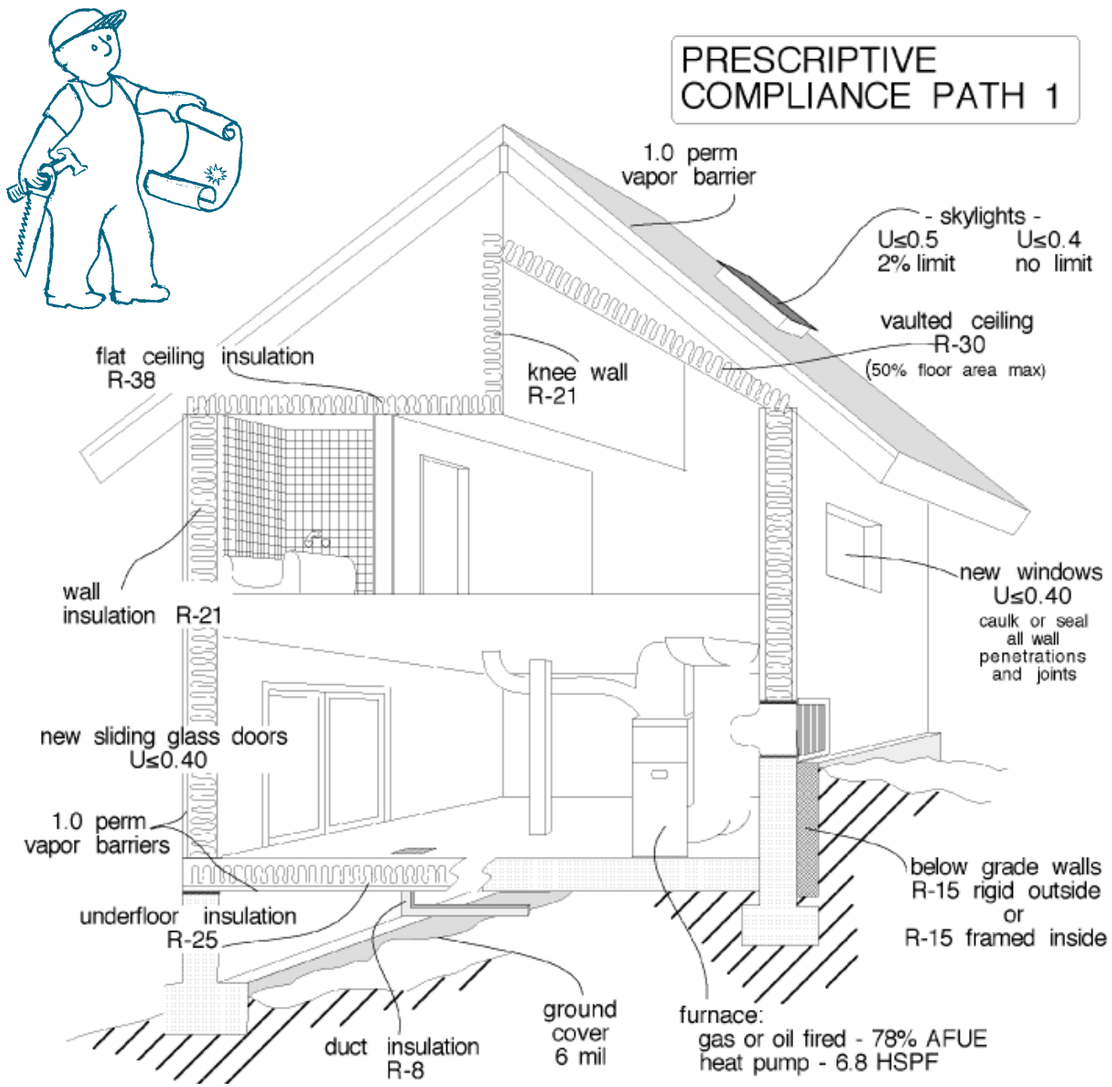
When you pick up your permit, make sure you check for additions or corrections — and make sure you understand them. Clear communication between the homeowner, the builder, the subcontractors and the building department is essential to meeting the requirements of ***approved plans.***

During construction, an inspector may find some building details that do not meet code. Major problems can be expensive to correct. To avoid unnecessary expense and stress, ***do not make any changes in the field without prior approval from the building department.***

Getting a Permit

1 Make sure your building design complies with the energy code.
Take time to understand the basic requirements of the code before you finalize your design.

2 Make sure your plans show compliance with the energy code.
Your plans should describe the construction of all building envelope components: walls, windows and doors, ceiling/roofs and floors. Describe the components in enough detail to show that you meet the requirements (see example below).



Building Envelope Requirements

The following table shows Oregon Residential Energy Code requirements for building components under path 1. Nine other paths allow design variations, such as "Limited House Size" and "Sun Tempered" designs. Consult the building code for details about these and other options.

Building Component	Path 1 Requirement
Max. Allowable Window Area	No Limit
Window Class[1]	U-0.40
Doors (other than main entry)	U-0.20
Main Entry Door (max. 24 sq ft)	U-0.54
Wall Insulation[2]	R-21
Underfloor Insulation	R-25
Flat Ceilings	R-38
Vaulted Ceilings[3]	R-30
Skylight Class	U-0.50
Skylight Area[4]	< 2%
Basement Walls	R-15
Slab-Floor Edge Insulation	R-15
Forced-Air Duct Insulation[5]	R-8

[1] Window and skylight U-values shall not exceed the number listed. U-values also may be listed as "class" on some windows and skylights. (For example, CL40 is the same as U-0.40.)

[2] If advanced-frame wall construction is used, only R-19 is required.

[3] Vaulted area, unless insulated to R-38, may not exceed 50 percent of total heated floor space.

[4] Allowable skylight area as a percentage of heated floor space. Any glazing in the roof/ceiling assembly above the conditioned space shall be considered a skylight.

[5] Applies to all duct systems or portions exposed to unconditioned spaces.

General Requirements

General requirements that warrant special attention include the following:

- Insulation and windows shall have National Fenestration Rating Council (NFRC) or exempt labeling.
- Batt-type insulation shall be installed flush against the warm side of the cavity, insofar as practical.
- Recessed light fixtures may not be installed in cavities intended to be insulated, unless rated for direct contact with insulation (IC-rated).
- Below-grade walls shall be insulated from the bottom of the above-grade subfloor downward and to the top of the below-grade finished floor.
- Window U-factors shall be certified through the NFRC certification program.
- Window and door air leakage rates shall meet the ASTM standard.
- All exterior joints around windows, around door frames, between wall cavities and window or door frames, between wall and foundation, between wall and roof, and other openings in the exterior envelope shall be sealed in a manner approved by the building official.
- Exterior walls of new buildings shall have vapor barriers installed on the warm side (in winter) with a 1-perm dry cup rating or less.
- All exterior ceilings without an attic space above shall have a vapor barrier with a 0.5-perm cup rating or less.
- An approved ground cover shall be installed in the crawl space for both new and existing buildings when insulation is installed.
- All heating, ventilating and air conditioning systems shall be provided with the proper controls (section C501.3 or 1308.1.2).
- All fireplaces and stoves shall meet code requirements for outside combustion air.
- Split-system heat pumps shall have a heating seasonal performance factor of no less than 6.8.
- Gas- and oil-fired furnaces shall have an annual fuel utilization efficiency of no less than 78 percent.
- All hot water piping shall be insulated.