Energy Code Compliance

2006 International Energy Conservation Code

The Town of Basalt has adopted the 2006 IECC for an energy code. It has been greatly simplified from previous editions. For residential construction there are 3 ways to demonstrate compliance: "R-value computation"; "U-factor alternative"; and "Total UA alternative". The R-value and U-factor options are prescriptive methods, with compliance criteria set by individual building component; the Total UA method is performance based, evaluating the entire thermal envelope.

R-value computation method

Compliance by R-value computation is considered the simplest method of demonstrating compliance, but it is not necessarily the most cost effective for construction. Compliance can be determined from a building or wall section in a standard set of construction drawings. Minimum requirements are based on local climate. The Town of Basalt is classified as Climate Zone 6.

CLIMATE
Climate Zone
6

The following insulation and fenestration requirements from Table 402.1.1 of the 2006 *International Energy Conservation Code* (IECC) apply:

MINIMUM FENESTRATION VALUES	
Window U-factor	Skylight U-factor
0.35	**0.60**

There is no limit on glazing area.

MINIMUM INSULATION VALUES						
Ceiling R-Value	Wood-frame wall R-value	Mass wall R-value	Floor R-value	Basement wall R-value	Slab R-value & depth	Crawl space wall R-value
49	**19**	**15**	**30**	**10** continuous **13** furred	**10** **3** ft.	**10** continuous **13** furred

In ceilings with attics an R-38 is sufficient if the full-height uncompressed insulation extends over the top plate of the wall (which requires raised-heel trusses). In ceilings without attic spaces, i.e. vaulted ceilings, R-38 may also be used. If rafter depth does

not allow an R-38 with ventilation space an R-30 is permitted, provided the area does not exceed 500 s.f. Recessed light fixtures must be airtight and rated Type IC, or boxed on site.

Wood-framed walls require air infiltration controls on the exterior (e.g. housewrap) and moisture control (vapor barrier) on the interior.

Floors over outdoor spaces and vented crawl spaces must be insulated to R-30. Remember, on an overhang, the vapor barrier goes up, toward the heated area. Floors over unvented crawl spaces may be uninsulated provided the crawl space walls are insulated (R-10 or R-13) and a vapor-barrier, with 6" overlaps and sealed/taped edges, covers the ground.

U-factor alternative
If some flexibility or trade-offs are desired, energy code compliance may be demonstrated by overall performance of the building thermal envelope and systems. The best way to work through this method is with REScheck computer software. REScheck software and User's Guide is available for download FREE at the U.S. Department of Energy website www.energycode.gov/rescheck.

Total UA alternative
This is the most technical and complex method of demonstrating energy code compliance – the gold standard. This is the method used to qualify for an Energy Star Home Energy Rating System (HERS) rating. Computer software is required and this level of evaluation is beyond the capabilities of REScheck. DOE-2 (www.doe2.com/DOE2) and "user friendly, yet highly sophisticated" REM/Rate (which is only licensed to qualified HERS providers) are commonly used for this alternative.

Mandatory requirements for all alternatives
At least one **thermostat** is required for each separate heating and cooling system. **Ducts** outside the thermal envelope must be insulated to a minimum R-8. Ducts in floor trusses require R-6 insulation, minimum. Joints must be substantially sealed with mastic or (UL-181) approved tape.

Pipe for fluids over 105°F or below 55°F require R-2 insulation.

Circulating hot water systems require a switch for the pump and R-2 insulation on piping in the circulation loop.

Mechanical ventilation systems require dampers at outdoor air intakes and exhausts.

Heating and cooling equipment must be sized according to *ACCA Manual J*.

Equipment efficiency is established by the National Appliance Energy Conservation Act (NAECA), except that minimum heating appliance efficiency has been established locally at 85% [Basalt Municipal Code, Section 18-17(a)(19)].

TOWN OF BASALT

Energy Code Compliance Certificate
For One- and Two- Family Dwellings

Building Permit Date _____
Builder _____
Address _____
Permit # _____

Energy code compliance has been achieved using the prescriptive approach. I hereby certify that the energy code components specified below have been installed in this building and have been inspected.

Builder Signature _____ Date _____

Inspector signature _____ Date_____

COMPONENT	R-VALUE	
	MINIMUM REQUIREMENT	INSTALLED
Ceilings	49 flat 38 vaulted	
Walls	19	
Mass walls	15	
Floors	30	
Basement walls	10 (cont.) 13 (furred)	
Slabs	10	
Crawl space walls	10 (cont.) 13 (furred)	
Ducts	8	
Hot water piping	2	
	U-VALUE	
Windows (& Doors, but 1)	0.35	
Skylights	0.60	
	EQUIPMENT EFFICIENCY	
Heating (AFUE)	85% FA 85% HW	
Cooling (SEER)	10	
Hot water (EF)	0.67 gas 0.97 electric	

THIS IS INTENDED TO BE A DISCLOSURE DOCUMENT.
PLEASE POST IN THE MECHANICAL ROOM