

**TOWN OF SUDBURY**  
**STRETCH CODE COMPLIANCE 780 CMR**  
Appendix 115.aa – Compliance as of January 1, 2011

Residential Buildings  
1 & 2 Family-Multi Family, 3 stories or less

Date: \_\_\_\_\_

Address: \_\_\_\_\_

Builder: \_\_\_\_\_ Phone # \_\_\_\_\_ E-mail \_\_\_\_\_

Homeowner: \_\_\_\_\_ Phone # \_\_\_\_\_ E-mail \_\_\_\_\_

Please check all applicable:

**Alteration, renovations or repairs:**

- Proposed work does not affect the building envelope
- Envelope requirements meet or exceed Energy Star, Version 5 program
- Cavities filled with insulation materials which meet or exceed and R-value of 3.5/inch
- Include specifications and type of material
- HERS Index rating (Performance option)

**Additions (choose one):**

- Energy Star Qualified Homes thermal Bypass Inspection Checklist (Prescriptive Option)  
Envelope insulation requirements meet or exceed Energy Star, Version 5 program (Prescriptive Option)
- or
- HERS index rating option (Performance option)

**New construction – HERS Rater required**

- HERS Index rating (Home Energy Rating System report must be included)
- Rating of 65 or less (3000 sf or more)
- Rating of 70 or less (3000 sf or less)

If utilizing the HERS index rating, please include the RESNET Certified HERS rater information (include copy of certification):

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

*I, the undersigned, certify knowledge and understanding of the energy conservation requirements as enforced by the Town of Sudbury and certify that the above information is accurate to the proposed construction.*

Building Owner Signature (1 & 2 family) \_\_\_\_\_ Date \_\_\_\_\_

Contractor Signature \_\_\_\_\_ Date \_\_\_\_\_

*If the work is under design provisions of Sec 116 780 CMR, Construction Control, the following is required:*

Registered Design Professional (Multi-family) \_\_\_\_\_ Date \_\_\_\_\_

Registered Design Professional Signature \_\_\_\_\_ Date \_\_\_\_\_

The Stretch Energy Code is the *International Energy Conservation Code (IECC) 2009* with Massachusetts Amendments (780 CMR 115.AA).

**101.1, 101.2, and 101.3** Replace as follows:

**101.1 Title.** This code shall be known as the Massachusetts Stretch Energy Code and shall be cited as such. It is referred to as "this code."

**101.2 Scope.** This code applies to new residential buildings, renovations of or additions to existing residential buildings, new commercial buildings, and additions to existing commercial buildings. Renovations of existing commercial buildings, and replacement or reconstruction of existing commercial building components and elements, are not subject to the provisions of this code. Buildings not included in this scope shall comply with Chapter 13 or 34 of the *International Building Code 2009* with Massachusetts Amendments (780 CMR 13.00 or 34.00) or for Single- and Two-family dwellings at 780 CMR 61.00, or 93.00, as applicable.

**101.3 Purpose and Intent.** The purpose of this code is to provide a more energy efficient alternative to the base code energy for new and existing buildings. A municipality seeking to ensure that construction within its boundaries is designed and built above the energy efficiency requirements of 780 CMR may mandate adherence to this code.

This code may be adopted or rescinded by any municipality in the commonwealth in the manner prescribed by law.

If adopted by a municipality, this code, rather than Chapter 13 or 34 of the *International Building Code 2009* with Massachusetts Amendments (780 CMR 13.00 or 34.00) or for Single- and Two-family dwellings at 780 CMR 61.00, or 93.00, as applicable, shall govern.

This code shall regulate the design and construction of buildings to provide flexibility, and, permit the use of innovative approaches and techniques to achieve effective energy use.

**401** Replace as follows:

**401.1 Scope.** Chapter 4 applies to residential buildings.

**401.2 New Construction.** New low-rise (three stories or less) residential buildings including townhouses shall require a HERS (Home Energy Rating System) index rating as verified by a RESNET (Residential Energy Services Network) certified HERS rater.

1. For units equal to or greater than 3,000 sq. ft. in conditioned floor space, a HERS rating of 65 or less is required.
2. For units less than 3,000 sq. ft., a HERS rating of 70 or less is required.
3. In addition, all new construction shall demonstrate compliance with the Energy Star Qualified Homes Thermal Bypass Inspection Checklist<sup>1</sup>

**401.3 Prescriptive Option for Residential Additions.** Additions to an existing building, building system or portion thereof shall conform to IECC 2009 Chapter 4, and shall further demonstrate compliance with:

1. The Energy Star Qualified Homes Thermal Bypass Inspection Checklist<sup>1</sup>.
2. Fenestration U-factor requirements as listed in Energy Star program requirements for Residential Doors, Windows and Skylights - Version 5<sup>2</sup>
3. Ducts for new HVAC systems shall be sealed and tested post-construction to demonstrate leakage to outdoors of less than or equal to 4 cfm per 100 sq. ft. of conditioned floor area, except where the air handler and all ducts are located within *conditioned space*.

**401.4 Performance Option for Residential Additions.** The performance approach and HERS ratings of 401.2 may be followed in *lieu* of the prescriptive requirements of section 401.3

**401.5 Prescriptive Option for Alterations, Renovations or Repairs.** Alterations, renovations or repairs that involve accessing the building envelope shall require the affected portion of the envelope to comply with 401.3. Envelope insulation shall meet or exceed IECC 2009 requirements (Chapter 4, section 402) for climate zone 5, or fully fill existing cavities with insulating material which meets or exceeds an R value of R 3.5/inch.

**401.6 Performance Option for Alternations, Renovations or Repairs.** In all cases of alternations, renovations or repairs the performance approach of 401.2 may be followed in *lieu* of the prescriptive requirements of section 401.5 with the following HERS rating requirements:

1. For units equal to or greater than 2,000 sq. ft. in conditioned floor space, a HERS rating of 80 or less is required.
2. For units less than 2,000 sq. ft., a HERS rating of 85 or less is required.
3. Compliance with the Energy Star Qualified Homes Thermal Bypass Inspection Checklist.

<sup>1</sup> [http://www.energystar.gov/ia/partners/bldgs\\_lenders\\_raters/downloads/Thermal\\_Bypass\\_Inspection\\_Checklist.pdf](http://www.energystar.gov/ia/partners/bldgs_lenders_raters/downloads/Thermal_Bypass_Inspection_Checklist.pdf).

<sup>2</sup> [http://www.energystar.gov/ia/partners/prod\\_development/archives/downloads/windows\\_doors/WindowsDoorsSkylightsProg\\_Requirements7Apr09.pdf](http://www.energystar.gov/ia/partners/prod_development/archives/downloads/windows_doors/WindowsDoorsSkylightsProg_Requirements7Apr09.pdf).



# ENERGY STAR Qualified Homes Thermal Bypass Inspection Checklist

Home Address: _____		City: _____		State: _____	
Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A
1. Overall Air Barrier and Thermal Barrier Alignment	<b>Requirements:</b> Insulation shall be installed in full contact with sealed interior and exterior air barrier except for alternate to interior air barrier under item no. 2 ( <i>Walls Adjoining Exterior Walls or Unconditioned Spaces</i> )				
	<b>All Climate Zones:</b>				
	1.1 Overall Alignment Throughout Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2 Garage Band Joist Air Barrier (at bays adjoining conditioned space)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3 Attic Eave Baffles Where Vents/Leakage Exist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Only at Climate Zones 4 and Higher:</b>				
	1.4 Slab-edge Insulation (A maximum of 25% of the slab edge may be uninsulated in Climate Zones 4 and 5.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Best Practices Encouraged, Not Req'd.:</b>				
1.5 Air Barrier At All Band Joists (Climate Zones 4 and higher)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.6 Minimize Thermal Bridging (e.g., OVE framing, SIPs, ICFs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Walls Adjoining Exterior Walls or Unconditioned Spaces	<b>Requirements:</b> <ul style="list-style-type: none"> <li>Fully insulated wall aligned with air barrier at both interior and exterior, OR</li> <li>Alternate for Climate Zones 1 thru 3, sealed exterior air barrier aligned with RESNET Grade 1 Insulation fully supported</li> <li>Continuous top and bottom plates or sealed blocking</li> </ul>				
	2.1 Wall Behind Shower/Tub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.2 Wall Behind Fireplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.3 Insulated Attic Slopes/Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.4 Attic Knee Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.5 Skylight Shaft Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.6 Wall Adjoining Porch Roof	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.7 Staircase Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.8 Double Walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Floors between Conditioned and Exterior Spaces	<b>Requirements:</b> <ul style="list-style-type: none"> <li>Air barrier is installed at any exposed fibrous insulation edges</li> <li>Insulation is installed to maintain permanent contact with sub-floor above including necessary supports (e.g., staves for blankets, netting for blown-in)</li> <li>Blanket insulation is verified to have no gaps, voids or compression.</li> <li>Blown-in insulation is verified to have proper density with firm packing</li> </ul>				
	3.1 Insulated Floor Above Garage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3.2 Cantilevered Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Shafts	<b>Requirements:</b> Openings to unconditioned space are fully sealed with solid blocking or flashing and any remaining gaps are sealed with caulk or foam (provide fire-rated collars and caulking where required)				
	4.1 Duct Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.2 Piping Shaft/Penetrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4.3 Flue Shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Attic/ Ceiling Interface	<b>Requirements:</b> <ul style="list-style-type: none"> <li>All attic penetrations and dropped ceilings include a full interior air barrier aligned with insulation with any gaps fully sealed with caulk, foam or tape</li> <li>Movable insulation fits snugly in opening and air barrier is fully gasketed</li> </ul>				
	5.1 Attic Access Panel (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.2 Attic Drop-down Stair (fully gasketed and insulated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.3 Dropped Ceiling/Soffit (full air barrier aligned with insulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.4 Recessed Lighting Fixtures (ICAT labeled and sealed to drywall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.5 Whole-house Fan (insulated cover gasketed to the opening)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Common Walls Between Dwelling Units	<b>Requirements:</b> Gap between drywall shaft wall (i.e., common wall) and the structural framing between units is fully sealed at all exterior boundary conditions				
	6.1 Common Wall Between Dwelling Units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Home Energy Rating Provider: _____		Rater Inspection Date: _____		Builder Inspection Date: _____	
Home Energy Rater Company Name: _____		Builder Company Name: _____			
Home Energy Rater Signature: _____		Builder Employee Signature: _____			

Posted 05/02/08

## ENERGY STAR® Qualification Criteria for Residential Windows, Doors, and Skylights

Windows				Doors		
Climate Zone	U-Factor <sup>1</sup>	SHGC <sup>2</sup>	Performance	Glazing Level	U-Factor <sup>1</sup>	SHGC <sup>2</sup>
Northern	$\leq 0.30$	Any	Prescriptive	Opaque	$\leq 0.21$	No Rating
	$\leq 0.31$	$\geq 0.35$	Equivalent Energy Performance	$\leq \frac{1}{2}$ Lite	$\leq 0.27$	$\leq 0.30$
	$\leq 0.32$	$\geq 0.40$		$> \frac{1}{2}$ Lite	$\leq 0.32$	$\leq 0.30$
North-Central	$\leq 0.32$	$\leq 0.40$				
South-Central	$\leq 0.35$	$\leq 0.30$				
Southern	$\leq 0.60$	$\leq 0.27$				

  

Skylights		
Climate Zone	U-Factor <sup>1</sup>	SHGC <sup>2</sup>
Northern	$\leq 0.55$	Any
North-Central	$\leq 0.55$	$\leq 0.40$
South-Central	$\leq 0.57$	$\leq 0.30$
Southern	$\leq 0.70$	$\leq 0.30$

<sup>1</sup> Btu/h.ft<sup>2</sup>.°F

<sup>2</sup> Fraction of incident solar radiation

