

# Massachusetts New Homes with ENERGY STAR®



## ENERGY STAR® Homes

A Lifetime of Value, Comfort, and Healthier Living

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Account Manager

The sponsors of the Massachusetts New Homes with ENERGY STAR are Bay State Gas, Berkshire Gas, Cape Light Compact, GasNetworks, KeySpan Energy Delivery, Massachusetts Technology Collaborative, National Grid, New England Gas, NSTAR Electric, NSTAR Gas, UNITIL, and Western Massachusetts Electric.



# What is ENERGY STAR?

***Trusted government symbol  
that makes it **easy** for consumers  
to identify energy-efficient products***





# Why Build ENERGY STAR?

- Provides homebuyers with:
  - Construction that exceeds code (15% above IECC)
  - Greater quality and durability
  - Increased comfort
  - Better construction
  - Improved indoor air quality
  - Reduced noise
  - Lower utility bills and maintenance costs



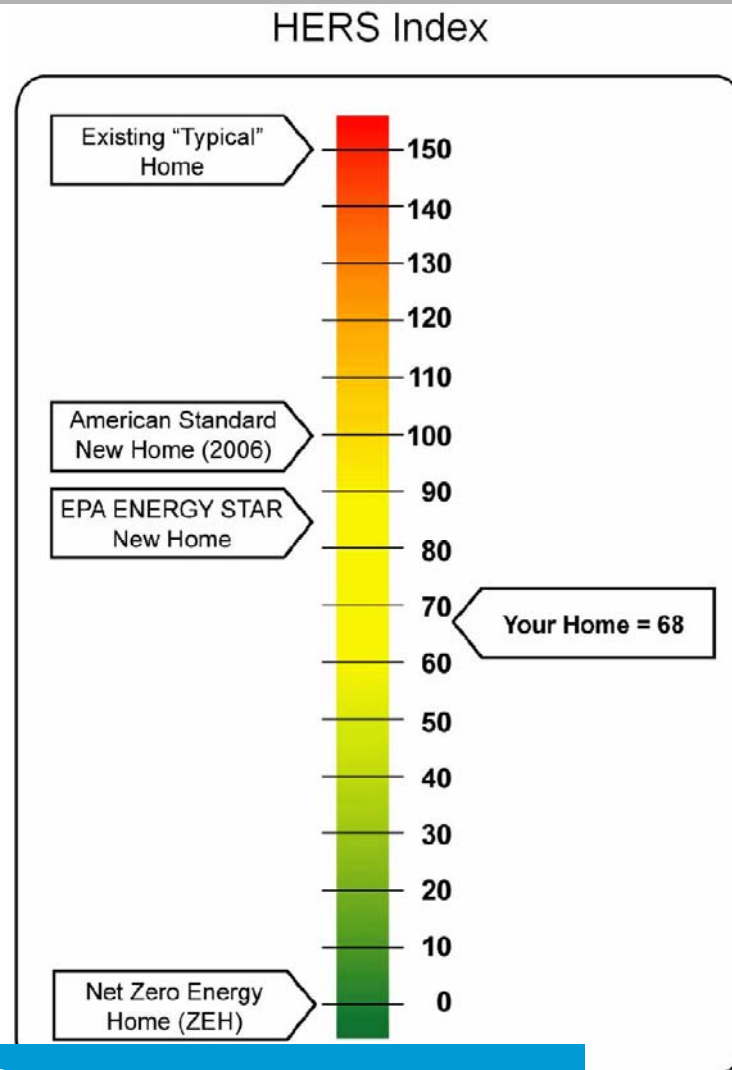
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# *How to Build ENERGY STAR Qualified Homes*



# How to Build ENERGY STAR Qualified Homes

- Step One
  - Submit an application and a set of plans.
    - Application can be found at [www.energystarhomes.com](http://www.energystarhomes.com)
    - Plans at a minimum should include; floor plans, elevations and window schedule
    - Plans will be analyzed to determine if initial HERS Index is 85 or below





# How to Build ENERGY STAR Qualified Homes

- Step Two
  - Meet the National Specifications Established by the EPA
    - Thermal Bypass Inspection Checklist
      - Coordination between general contractor and subs is crucial



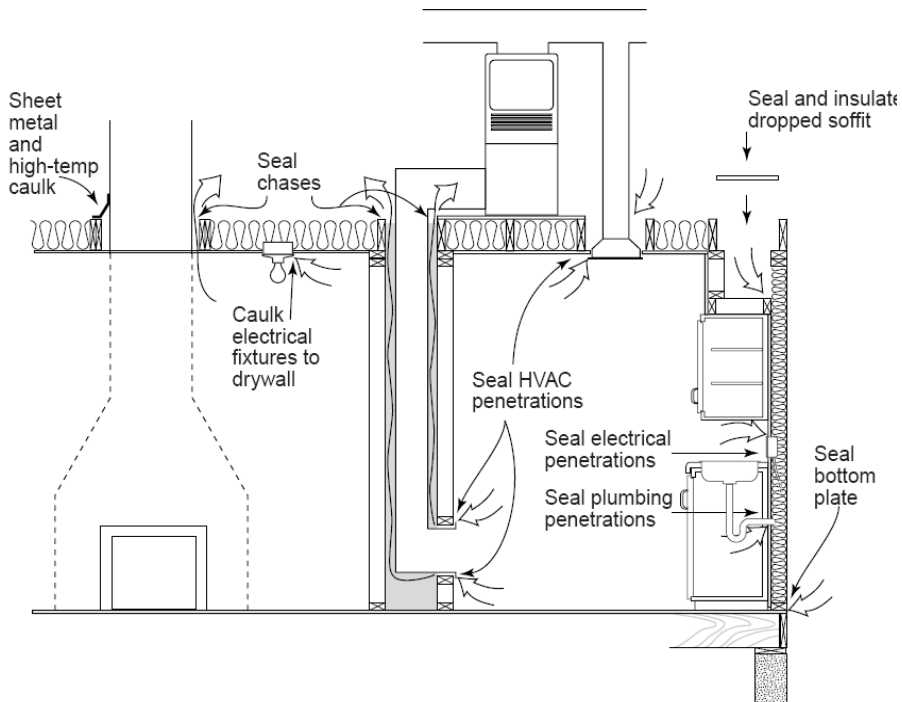
# How to Build ENERGY STAR Qualified Homes

## Thermal Bypass Inspection Checklist

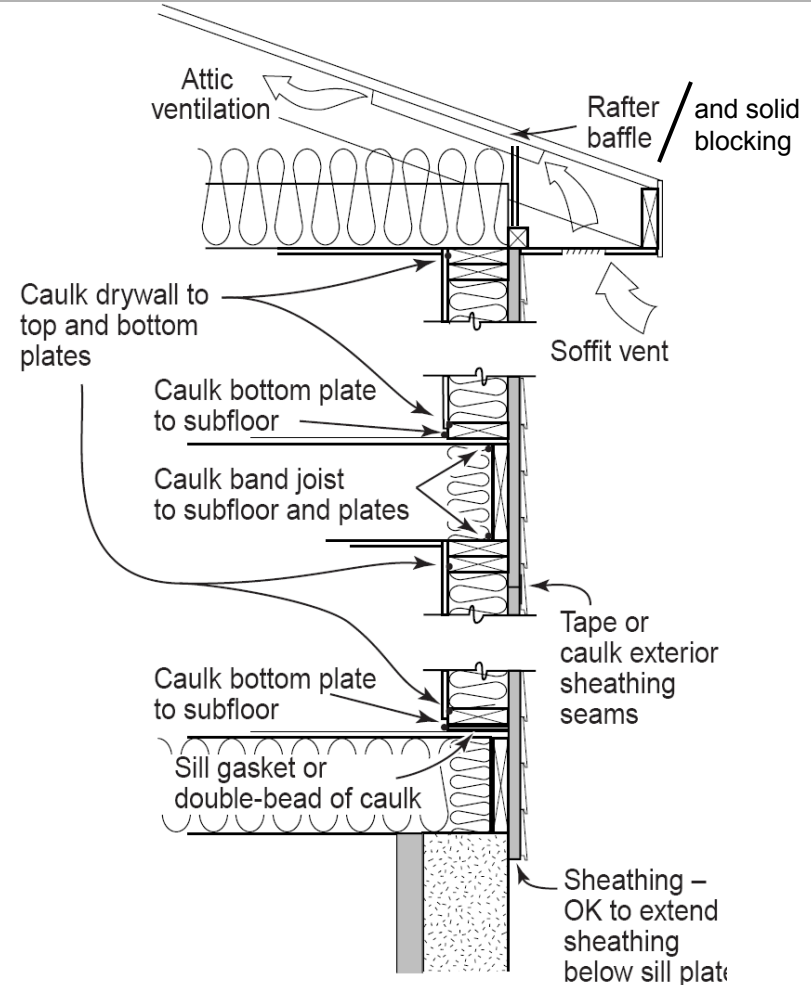
Home Address: _____		City: _____		State: _____	
Thermal Bypass	Inspection Guidelines	Corrections Needed	Builder Verified	Rater Verified	N/A
1. Overall Air Barrier and Thermal Barrier Alignment	<b>Requirements:</b> Insulation shall be installed in full contact with sealed interior and exterior air barrier 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"/>
2. Walls Adjoining Exterior Walls or Unconditioned Spaces	<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"/>
	<b>Requirements:</b> Fully insulated wall aligned with air barrier at both interior and exterior, <b>OR</b> Alternate for <b>Climate Zones 1 thru 3</b> , sealed exterior air barrier aligned with RESNET Grade 1 insulation fully supported Continuous top and bottom plates or sealed blocking				
	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"/>
3. Floors between Conditioned and Exterior Spaces	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"/>
	<b>Requirements:</b> Air barrier is installed at any exposed insulation edges Insulation is installed to maintain permanent contact w/ sub-floor above <b>Optional until July 1, 2008</b> , insulation is installed to maintain permanent contact with air barrier below				
	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> 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 Movable insulation fits snugly in opening and air barrier is fully gasketed				
	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 btwn drywall shaft wall (common wall) and structural framing btwn units is 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"/>
Rater Inspection Date: _____		Builder Inspection Date: _____			
Home Energy Rating Provider: _____		Builder Company Name: _____			
Home Energy Rater Company Name: _____		Builder Division Name: _____			
Home Energy Rater Signature: _____		Builder Employee Signature: _____			

# How to Build ENERGY STAR Qualified Homes

- Build a tight shell
  - Tested by a blower door



Seal dropped soffit ceilings, plumbing and electrical penetrations, and utility chases.



Seal exterior sheathing joints, and top and bottom plates.

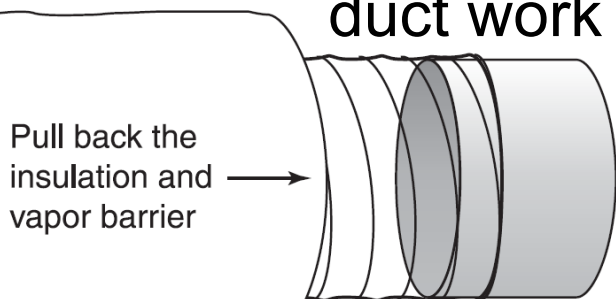
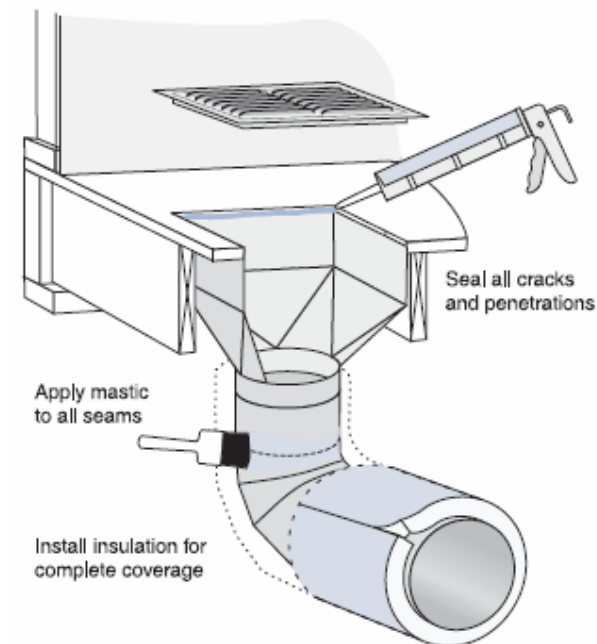


# How to Build ENERGY STAR Qualified Homes

## Seal all HVAC duct work to the ENERGY STAR standard

- Leakage  $\leq 6$  cfm to outdoors per 100 sq. ft. of floor area
- This is a pass/fail test
- Best Practice- keep ALL HVAC duct work in conditioned space

BOOT AND DUCT CONNECTION HIGHLIGHTS



Pull back the insulation and vapor barrier

Apply mastic over the fitting and / or inside the duct core before pulling the inner lining at least 1-inch over the fitting.



# How to Build ENERGY STAR Qualified Homes

- Add mechanical ventilation
  - Usually met with one bath fan per unit
    - Rated for continuous use
    - 1.5 Sones or less
    - Hardwired to a 24-hour programmable timer
      - Set to ventilate the minimum amount necessary to meet ASHRAE 62.2 and insure good IAQ and moisture management
  - Other options include Heat Recovery Ventilators or inline fans



# How to Build ENERGY STAR Qualified Homes

- Step Three
  - Mid inspection
    - After insulation is installed but before board is hung
      - HERS Rater comes to site to grade quality of insulation installation
      - Check for TBC items
      - Visually inspect duct sealing
      - Visually inspect air sealing of building shell



# How to Build ENERGY STAR Qualified Homes

- Step Four
  - Final Inspection
    - Blower Door test
      - Test the tightness of the building shell
    - Duct Blaster Test
      - Test the tightness of the HVAC system's duct work
        - » If shell tightness is extremely tight, test will only be done if duct work runs in unconditioned space, i.e. unheated attic or unfinished basement space



# How to Build ENERGY STAR Qualified Homes

- The ENERGY STAR is applied to EVERY qualified home: (the same identifying mark of ENERGY STAR appliances & products)





**2007**

***Massachusetts New Homes with  
ENERGY STAR  
Financial Incentives***



# Financial Incentives

Package	Eligibility Requirements	Incentive Amount <sup>1</sup>
ENERGY STAR	<ul style="list-style-type: none"><li>Meet national ENERGY STAR guidelines <sup>3</sup></li></ul>	\$750
Code Plus Package #2	<ul style="list-style-type: none"><li>Air Seal (6 ACH CFM 50)</li><li>Duct Seal (8% Leakage <sup>2</sup>)</li></ul>	\$325
Code Plus Package #1	<ul style="list-style-type: none"><li>Air Seal (8 ACH CFM 50)</li><li>Duct Seal (10% Leakage <sup>2</sup>)</li></ul>	\$250

**NOTES:**

<sup>1</sup> Incentive amounts are subject to change.

<sup>2</sup> Duct leakage rate is % of floor area leakage to outdoors tested at 25 Pascal pressure.

<sup>3</sup> Bath fan rated for continuous use, ≤1.5 Sones and controlled by a 24-hour programmable timer or equivalent mechanical ventilation system is required to insure healthy indoor air quality and proper moisture management



# Financial Incentives

Package	Equipment / Appliances	Eligibility Requirements	Incentive
<b>ENERGY STAR Appliances</b>	ENERGY STAR qualified refrigerator and dishwasher	Must be installed in <b>low-income housing</b>	\$100 per package
<b>Heating and Cooling (COOL SMART)</b>	SEER 14 and EER of 11.5 -or- HSPF of 8.2	Home must be located in <b>NSTAR or National Grid's service territory</b>	\$300 per qualifying unit



# Financial Incentives

- Gas Efficiency for gas heated homes
  - Available through GasNetworks at [www.gasnetworks.com](http://www.gasnetworks.com)

Equipment	Incentive
High Efficiency Furnace AFUE 90% or greater	\$100
High Efficiency Furnace with ECM 92% or greater	\$400
High Efficiency Steam Boilers 82% or greater	\$200
High Efficiency Hot Water Boilers 85% or greater	\$500
High Efficiency Hot Water Boilers 90% or greater	\$800
High Efficiency Indirect Water Heater/ On-Demand Tankless Water Heaters 82% or greater	\$300
ENERGY STAR® Thermostats	\$25 ( $\leq 2$ )



# Financial Incentives

- Renewable energy systems in affordable housing
  - Application available through Massachusetts New Homes with ENERGY STAR

	Single Unit Tied	Multi-Unit Tied	
	Affordable	20%-49% Affordable	50%-100% Affordable
<b>Base Incentive</b>	<b>\$7.00</b>	<b>\$6.00</b>	<b>\$7.00</b>
<b>Possible Addition to Base</b>			
<b>Green Buildings (LEED/CHPS)</b>	<b>\$1.00</b>	<b>\$1.00</b>	<b>\$1.00</b>



# Marketing Assistance

- Consumer Web site
  - Drive homebuyers to ENERGY STAR communities and homebuilder partner Web sites
- Free Real Estate Listings
  - For your ENERGY STAR qualified homes on [www.energystarhomes.com](http://www.energystarhomes.com)
- Marketing Staff Support
  - To successfully integrate ENERGY STAR into corporate messaging
- Marketing Materials
  - Access to the national ENERGY STAR marketing and sales tools



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***2007***

***Massachusetts New Homes with***  
***ENERGY STAR***  
***Eligibility Requirements***



# Home Eligibility Requirements

- Separately metered, new residential construction or total gut rehab
- Single-family detached or attached construction, OR multi-family attached construction permitted under the residential code
- Electrical service provided by an electric utility sponsor (some exceptions apply for in gas utility sponsor territories)
- Construction must be “completed” by December 31, 2007 (accepting applications for units that will be completed 2008)



# Contact Information

- Massachusetts New Homes with ENERGY STAR

[www.energystarhomes.com](http://www.energystarhomes.com)

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*Questions?*