

MINUTES

ENERGY COMMITTEE

WEDNESDAY MARCH 9, 2011

5:30 P.M.

GREAT BARRINGTON TOWN HALL

334 MAIN STREET, GREAT BARRINGTON, MA 01230

- I. Call to Order. Present Beth Moser, Jenn Bailey, Diego Guiterrez, Brandee Nelson, Alana Chernila, Nancy Rogers. Absent: Chris Vlcek. Meeting started at 6:43 p.m.
- II. Review and Approve Minutes of Meeting 2/10/11; Diego moved to accept minutes as corrected; Beth 2nd. Passed 4-0; Alana abstained.
- III. Green Communities & Stretch Code
 - a. Review meeting schedule & format: March 29 6:30-8:00 Mason Library - Poster prepared by Stockbridge Energy Committee was reviewed and revisions were discussed. Nancy was going to work to get a revised poster available in pdf for printing. Brandee will print 50 color copies and distribute to Nancy, Diego, Beth. Paul Greene asst building inspector will likely attend on Ed May's behalf on 3/29. Format of presentation for informational session was discussed. Alana noted that the Select Board voted in favor of placing Stretch Code on the warrant. In general presentation for 3/29 will be: introduction, information and Q&A. Brandee will ask Chris to confirm who will participate.
 - b. Review letter to the editor – Beth will send out letter as an individual for the 3/24 paper. Also reviewed press release. Beth will send a copy to Nancy to share with Stockbridge. Alana moved to approve as amended and release to news organizations and as needed. Nancy 2nd; Passed unanimously.
 - c. Stretch Code talking points- Reviewed fact sheet. All to use as talking points. Jenn clarified where we are with the 5 requirements of the Green Communities process. Items 1, 2, and 3 are in the works or achieved. Item 4 – no official policy yet but Great Barrington has only 2 vehicles.
 - d. Other outreach – All are working on outreach efforts through phone calls, emails, radio, liaison with Ed May. Beth will send to both papers, and WSBS and WBCR and Eileen Mooney (the Newsletter). Diego will post as a PSA. Committee will email all people we know. Nancy can coordinate for a radio

show – Diego to participate and check with Chris. Nancy will contact Avi and let us know if show could be done before meeting.

- e. Projects that might be impacted by Stretch Code passage – Update from Committee members (Tim Geller, Iredale, Riverschool, Town Planner). Alana will contact Tim Geller and Iredale. Brandee has been in touch with Chris Rembold, Town Planner.

Alana Moved to put the summary of the Stretch Code with directions to access full code in the Town Hall, Ramsdale Library and Mason Library; Brandee 2nd; unanimous.

- f. Stockbridge collaboration – poster & date: April 27th 6:30-8:00 Stockbridge Town Hall
 - g. Website update - tabled until next meeting
- IV. Green Barrington Funds – update; status quo for now.
- V. Nick Stanton – Resignation. Beth moved to formally accept resignation, Nancy 2nd; unanimously passed. Diego invited Jaya Jacobs to attend tonight's meeting since she is interested in participating. Jenn advised that opening is being advertised and interested parties can submit a letter of interest to the Town Manager.
- VI. Set next meeting date and potential agenda items – Alana suggested we discuss presentation at Town Meeting – Chris or Alana to possibly do. Potentially use some of BRPC slides.

Wednesday March 23rd at 6:00 pm; to focus on meeting presentation. Please note that the room is booked and we will need to be out by 7 pm.

- VII. Adjournment. Beth moved, Diego 2nd; unanimous.

Mr. Magadini inquired if Green Energy Code can be made available at the Town Clerk, Mason Library and Ramsdale Library.

We will check if Stretch Code is available on Town website.

Respectfully submitted,

Brandee Nelson



Massachusetts Stretch Code Improvement - Cash Flow

Baseline Home (2,672 sf)

	IECC 2009 Code	Stretch Code	Stretch Code - with ENERGY STAR ^{4,5} -
HERS Index Modeled in REM/Rate	86	70	70
Improvement Measures (changes relative to Basecase)	- Unconditioned basement - Floor, R30 - Walls, R21 - Ceiling, R38 G2 - Heating, 80 AFUE - Cooling, 13 SEER - Water Heating, .59 EF - Duct leakage, 8% - Infiltration, 7 ACH50 - Efficient lighting, 50%	- Ceiling, R38 G1 - Heating, 94 AFUE - Water heating, .62 EF - Infiltration, 4 ACH50 - Efficient lighting, 75% - Exhaust Only Ventilation	- Ceiling, R38 G1 - Heating, 94 AFUE - Water heating, .62 EF - Duct leakage, 6% - Infiltration, 5 ACH50 - Efficient lighting, 80% - Exhaust Only Ventilation
Improvement Costs		\$ 2,049	\$ 2,155
HERS Rater Fee ¹		\$ 900	\$ 900
HERS Rater reimbursement ²		-	\$ (650)
ENERGY STAR Incentive ³		-	\$ (650)
Total Improvement Costs		\$ 2,949	\$ 1,755
Mortgage Interest Rate		6%	6%
Loan Term (Years)		30	30
Annual Incremental Mortgage Payment		\$ 214	\$ 127
Annual Energy Costs ⁶	\$ 3,970	\$ 3,463	\$ 3,454
Annual Energy Savings from Baseline		\$ 507	\$ 516
Annual Cash Flow		\$ 293	\$ 389

¹ Estimated Massachusetts ENERGY STAR Homes Program HERS Rater Fee (Range is from \$750-\$1500, but typically close to \$750). Includes cost for conducting Thermal Bypass Inspection

² HERS Rater Fees are reimbursed by the Massachusetts ENERGY STAR Homes program by between \$650-900 per unit, depending upon the HERS rating achieved.

³ Massachusetts ENERGY STAR Homes Program may receive a minimum incentive of \$650.

⁴ ENERGY STAR requirements have been added to the Stretch Code package.

⁵ Stretch code homes may qualify for of \$1250 where the HERS rating is -65 or lower

⁶ Annual energy costs are based on most recently available fuel costs, from November 2009. Costs for heating are based on natural gas prices, the least expensive heating fuel. With oil, savings would increase.

Summary of the Massachusetts Building Code Appendix 120.AA, 'Stretch' Energy Code

Appendix 120.AA known as the 'Stretch code', was adopted by the Massachusetts Board of Building Regulations and Standards in May 2009, as an optional appendix to the Massachusetts Building Code 780 CMR.

This optional 'stretch code' was developed in response to the call for improved building energy efficiency in Massachusetts. Towns and cities in the Commonwealth may adopt Appendix 120.AA in place of the energy efficiency requirements of the 'base' building code. In addition, the 'base' building energy code in Massachusetts will be updated in 2010 to the recently published IECC (International Energy Conservation Code) 2009 energy code¹. The 'stretch code' is similarly based on the IECC 2009 energy code, but with approximately 20% greater building efficiency requirements, and a move towards 3rd party testing and rating of building energy performance.

The stretch code may be adopted by any town or city in the commonwealth, by decision of its governing body following a public hearing. In a city the governing body is the city manager and the city council, or the mayor and city council². In towns the governing body is the board of selectmen. In order to be adopted, the appendix must be first considered at an appropriate municipal public hearing, subject to the municipality's existing public notice provisions.

Stretch code provisions

➤ Residential - New Construction

New residential buildings 3 stories or less will be required to meet an energy performance standard using the Home Energy Rating System³ (HERS). The HERS index scores a home on a scale where 0 is a zero-net-energy home, and 100 is a code compliant new home (currently based on the IECC 2006 code). The HERS index has been in use for many years by beyond code programs such as Energy Star Homes, and LEED for Homes, and by the Federal IRS for tax credits and energy efficient mortgages. HERS ratings are performed by an independent HERS rater, working with the home builder, and then submitted to the local building code official.

The MA stretch code requires a HERS index of 65 or less for new homes of 3,000 square feet or above, and 70 or less for new homes below 3,000 square feet (this includes multi-family units in buildings of 3 stories or less).

(A HERS index of 65 means that the home is estimated to use 65% as much energy as the same home built to the 2006 energy code, or a 35% annual energy savings.)

▶ Residential – Home renovations

Home additions and renovations have two options to meet the stretch code:

¹ The Green Communities Act of 2008 requires that Massachusetts adopt each new IECC within one year of its release, the IECC is updated on a 3 year cycle so the next version will be IECC 2012.

² Cities having a Plan D or Plan E charter have the City manager and city council as the governing body, other cities have a Mayor and city council.

³ For a summary of the HERS index see: http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS

- i) The same “performance” approach as new construction but requiring a HERS index of 80 or less for significant changes to homes over 2,000 square feet, or 85 or less for homes below 2,000 square feet.
- ii) A “prescriptive” approach, where specific efficiency measures are required rather than a HERS index number. This utilizes the Energy Star for Homes program prescriptive requirements, and insulation at least equal to IECC 2009.

➤ **Commercial –New Construction**

The stretch code also applies a performance-based code to commercial buildings, with the option of a prescriptive code for small and medium-sized commercial buildings. Buildings smaller than 5,000 square feet are exempt, as are building renovations, and “specialty” buildings – supermarkets, laboratories, and warehouses – below 40,000 square feet in size, due to their widely differing energy needs. These exempt buildings remain subject to the ‘base’ Massachusetts energy code (IECC 2009 and ASHRAE 90.1-2007).

- ✓ Large buildings of any type over 100,000 square feet, and ‘specialty’ buildings over 40,000 square feet are required to meet a performance standard set at 20% below the energy usage of the commonly used ASHRAE 90.1-2007 code⁴, demonstrated through modeling by methods and software approved by the BBRS.
- ✓ Medium-sized commercial buildings, which include residential buildings of 4 stories or more, but that are less than 100,000 square feet, have the option of meeting the same 20% better than ASHRAE 90.1-2007 performance standard, or using a simplified, prescriptive energy code.

The prescriptive code is based on Chapter 5 of the IECC 2009 energy code, and adds incremental efficiency improvements primarily through:

- ✓ a. Building envelope elements (walls, roofs, windows, insulation, etc.)
- ✓ b. Commissioning requirements to ensure that buildings’ energy systems operate as designed.
- ✓ c. More efficient lighting power densities and improved lighting controls.
- ✓ d. A choice of one of three compliance paths: high efficiency HVAC equipment, further lighting energy reductions, or on-site renewable energy.

This prescriptive option for commercial buildings between 5,000 and 100,000 sq. ft. was developed from the Core Performance program of the New Buildings Institute. This program has been developed and used for utility incentive programs in Massachusetts for the past couple of years. The Core Performance program used over 30,000 energy modeling runs to evaluate and rank the most cost effective modifications to the ASHRAE 90.1 code, and has been run specifically with Boston climate data to represent Massachusetts. Certain areas of this prescriptive option were also updated to reflect recent energy code development for future iterations of ASHRAE and IECC codes and refined for specific application in Massachusetts where they are cost-effective.

⁴ Energy modeling must show a 20% improvement relative to ASHRAE 90.1-2007 Appendix G.

HERS 2006 index scale smaller numbers are better, with 0 representing a net zero energy home, and 100 representing a home built to meet the national model energy code in 2006 (the IECC 2004 with 2005 amendments). A HERS rating of 65 means that the home uses about 35% less energy than the same size home built to the 2004/2005 IECC code requirements. The Residential Stretch code is based on the nationally successful 'Energy Star for Homes' program requirements, which utilize HERS ratings.

R3. Do I have to get a HERS rating?

New homes built under the stretch code must get a HERS rating. Renovations and additions to homes have the option of the HERS rating or a 'prescriptive' approach, whereby specific efficiency measures are required, but no computer modeling is done. The HERS performance-based approach provides an excellent way to ensure that homes are not only well designed but also well built. As part of the HERS rating the home will be tested for air leakage, and under both the base and the stretch code homes with heating and cooling ducts may also have those tested for leakage. Combined with the thermal bypass checklist the HERS rater, builder and building inspector can have confidence that the completed homes really are energy efficient.

R4. How do I meet the residential stretch code when making renovations to existing homes?

Existing homes being renovated or expanded have two choices when it comes to stretch code compliance. The performance option is based on a HERS rating, while the prescriptive option uses the base IECC 2009 energy code, but in addition requires quality assurance with the Energy Star Thermal Bypass checklist and the use of Energy Star windows doors and skylights where replacements are made. If the prescriptive option is chosen, then you only need to meet code for the systems that are being replaced. This means that adding a new efficient boiler does not require changing the windows, and adding wall and attic insulation does not require modifying the basement – although it may often make sense to combine measures where that is cost-effective.

Choosing to follow the HERS rating approach used by new construction often makes sense when doing a whole house renovation. While us-

ing the same HERS approach as new homes, existing homes have an easier standard to meet. The maximum allowable HERS score is 80 for home renovations greater than 2,000 ft² and 85 for renovated homes less than 2,000 ft².

R5. If I'm doing a small remodeling project, like a kitchen or a bathroom renovation, will I have to meet the stretch energy code?

If a small renovation involved replacing a couple of windows and opening part of a wall cavity, then those new windows and wall cavity would have to be brought up to the stretch code, just as the plumbing in the kitchen or bathroom being remodeled would have to comply with the plumbing code. However, improving a kitchen or bathroom would not trigger required changes to the rest of the home such as attic insulation or a new heating system. Only the systems being modified have to be brought up to code. Despite not being required, your contractor, utility company and code official may suggest cost-effective changes (often with tax and rebate incentives to reduce your energy bills) that you may want to consider doing at the same time.

R6. How do I find a HERS rater?

HERS raters work with the residential builder/developer/design team, and should be included in the team from the outset. An updated list of HERS provider companies is available on the Energy Star Homes website. The Energy Star for Homes program staff can also help you to contact a HERS rater in your region.

R7. What training and certification do HERS raters undergo?

HERS raters are typically experienced building professionals, who in addition take a week- or two week-long intensive training course in residential energy efficiency. After completing the training, learning how to use HERS rating software, and passing a test,⁸ new raters must also complete at least 5 ratings with an experienced HERS rater before being able to independently award ratings. In addition to this initial training and certification, HERS raters must be affiliated with a company that is certified as a HERS pro-

⁸ More information on the HERS rater test is available here:
<http://www.rcsnet.us/rater/tests/rater.htm>

vider, and is responsible for ongoing code education and quality assurance oversight of the HERS rater's work. The HERS providers also carry liability insurance and allow builders to request a review from a second HERS rater in the rare case of disputes.

R8. What testing equipment is required to meet the residential stretch code?

HERS ratings require testing of the air leakage rate of residential units. In addition, for homes that have forced air heating and central air conditioning systems that have ductwork running outside of the heated portion of a house, a duct leakage test is needed. These tests help calculate how much energy is needed to heat and cool a home, and help builders to identify possible problems before a home is completed, when there is still time to fix them cost-effectively.

R9. Are there enough HERS raters and testing equipment available, and what do they cost?

In 2008 over 15% of all new homes in Massachusetts were built through the Energy Star for Homes program, in 2009 that climbed to 34%, without any noticeable shortages. The majority of these homes used HERS raters and testing equipment to achieve a HERS rating. The growing interest in HERS ratings has led to more building professionals going through HERS training and certification and expanded sales of blower door and duct testing equipment. The Massachusetts Energy Star Homes website now lists several new HERS provider companies,⁹ and many more builders as Energy Star Homes partners. There is already in place an active market for HERS raters and testing equipment, and we don't anticipate demand for HERS raters exceeding the supply.

Costs for HERS ratings currently range from around \$600 to \$1,200 per unit in Massachusetts, and they are also subsidized by the utility-sponsored Energy Star for Homes program. The price variation may reflect differing levels of technical assistance to the builder depending on their needs and preferences.

⁹

http://www.energystar.gov/index.cfm?fuseaction=new_homes_partners.showStateResults&s_code=MA

R10. How much more does it cost to build to the stretch code, and how does this compare to the energy savings?

For new construction additional first costs are estimated at around \$3,000 for a 2,700 square foot single family home, including the cost of a HERS rater. This is reduced to about \$1,700 after receipt of \$1,300 in utility rebates, which translates into around \$125 a year when rolled into a 30-year mortgage at 6% interest. But these investments reduce energy bills by about \$500/year, resulting in net annual savings to the homeowner of about \$400. For a larger 4,400 ft² home the additional costs are higher but so are the energy savings, resulting in a net annual savings of \$1,100. This is an excellent value for the home buyer and a marketing opportunity for builders who are looking for another way to differentiate new homes from existing ones.

In the case of renovating a 3-unit urban triple-decker, the minimum additional construction costs for all three units combined relative to meeting the new base energy code is only around \$1,400, while the annual energy savings are over \$130 per year, yielding small but immediate net cash savings to the unit owners. Larger annual savings could be achieved by more aggressive energy efficiency improvements, but the stretch code requirements for renovations are modest.¹⁰

R11. What financial savings/rebates are there from building to the stretch code?

The stretch code is designed to allow builders to maximize use of the Energy Star Homes program with its full range of training, support and financial incentives. A new home with a HERS rating of 65 or less currently qualifies for \$1,250 from the Energy Star utility sponsors, and additional rebates are available for installing high efficiency heating and cooling equipment, appliances and lighting. The utility companies also provide \$650 to partially or fully cover the cost of hiring a HERS rater to work with the builder.

¹⁰ Separate documents are available that summarize the detailed cost-benefit analysis that has been undertaken to help set the appropriate level of energy efficiency for the stretch code. These calculations do not include substantial financial incentives available both from utilities in Massachusetts and through federal tax credits (see next question).

1. Economics

The Stretch Code makes a small incremental improvement to the required MA Code for energy performance. These improvements will likely become requirements in MA within several years as the MA code is now tied to the IECC (International Energy Conservation Code) improvement cycle. The cost of improvements are re-couped over time because less energy is required for heating and cooling. Greater savings and comfort can be achieved by greater improvements, and utility company rebates become higher.

Massachusetts Stretch Code Improvement - Cash Flow

Current energy requirements in MA are the IECC 2009

Improvement cost for 2670sf home ~\$2150 to achieve Stretch Code + Energy Star

Cost for Home Rater ~\$900, Energy Star rebates \$1300, net cost of improvements ~\$1755

30yr mortgage at 6%, cost of improvements against energy savings = net (+) cash flow of \$389/yr

Based on cheapest fuel (natural gas) - savings greater for oil or propane.

No fuel cost increase is accounted for - again, savings greater as fuel costs go up.

For more info google: ma stretch code cash flow

2. Community

The adoption of the Stretch Code is 1 of 5 requirements of the Green Communities Initiative. Over 60 MA towns and cities have become green communities to date, and thus eligible for green project funding. Lenox & Pittsfield have already benefitted from these funds.

The 5 criteria for Green Communities designation are:

1. As-of-right siting for green projects & manufacturing
2. Expedited permitting for green projects & manufacturing
3. Reduction of Town energy usage by 20% over 5 years
4. Town vehicle policy to reduce energy use where possible
5. Stretch Energy Code

The passage of the Stretch Code serves not only to save homeowners and building owners in the long term, but is part of achieving Great Barrington's eligibility for Green Communities Initiative grants. The Energy Committee is suggesting our 1st grant proposal to be for in-depth energy analysis of all town buildings - thus to help achieve the 3rd criteria. Other ideas are welcome.

3. Environment

For new homes and other buildings, reduced energy use means less strain on the earth's resources and less detrimental effects from burning fossil fuels. And the individual project also benefits from greater interior thermal comfort. These benefits are proportional to the investment and care taken during design and construction. The Stretch Code provides a way for Great Barrington to join other communities to show a bit of leadership - a 20% improvement to what's currently required. Individual projects can go far beyond these improvements, all the way down to net zero energy consumption.

4. Specifics

New Homes:

HERS rating baseline is a home built to the 2006 IECC code = 100

Stretch code: homes <3000sf HERS 70, >3000 HERS 65

Home Renovations:

changes <2000sf HERS 85, >2000 HERS 80

OR, prescriptive- Energy Star for homes and insulation to IECC 2009 min

Commercial - see attachment

Stretch Energy Code Public Information Session

Massachusetts Has a New Building Energy Code

On January 1, 2010 the state transitioned to a new Building Energy Code. The new code contains a number of significant changes from the prior code, including performance testing and the use of HERS raters to score a building's energy efficiency.

Communities Can Also Choose to Adopt the "Stretch Code"

The new building code also contains an optional Appendix—the Stretch Code—that communities can adopt to go slightly "above and beyond" the new code, requiring buildings to be even more energy efficient.

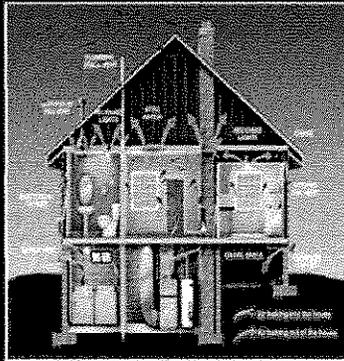
Adoption of the Stretch Code is one of the five criteria communities must meet to achieve Green Community designation.

At the information session you'll learn...

- What is called for in the energy section of the new building code, the Stretch Code, and how they differ.
- Details about the HERS Rating process and timing.
- What to anticipate for short-term cost impacts.
- What to anticipate for long-term cost savings.
- What this means for building in the Berkshires.

PLUS—Ask YOUR questions about the details of the code.

**March 29, 2011 — Gt. Barrington, MA
and
April 27, 2011 — Stockbridge, MA**



Where

March 29—Gt. Barrington
Mason Library
231 Main Street

April 27—Stockbridge
Town Offices
50 Main Street

When

6:30 - 8:00 pm

OPEN TO ALL RESIDENTS

AGENDA

Welcome — Selectman 6:30 pm

Stretch Code Overview — CET 6:40 pm

Existing Energy Code vs. "Stretch Code"
Developer & Inspector Responsibilities

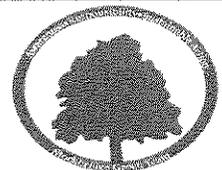
Get Local 7:15 pm

Panel Discussion—Building Inspector/Builder
Questions and Answers—Everyone



Center for
Ecological
Technology

Great
Barrington
Energy
Committee



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Green Team