

SUMMER CAMP 2012 Getting to Zero Energy

July 30, 2012

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Solar installations

Zero Energy Communities

Custom Homes

Coppersmith Way

Townsend, MA

- A 41 home project developed and being built by Transformations, Inc.
- Started with HERS 40 homes
- 2006 Goal of getting to Net Zero Energy in a cost effective way

The Zero Energy Challenge

- 2008 Utility sponsored program
- \$50,000 in prize money
- Lowest HERS score wins
- 6 Builders chosen to compete
- Only "shovel ready" projects qualified

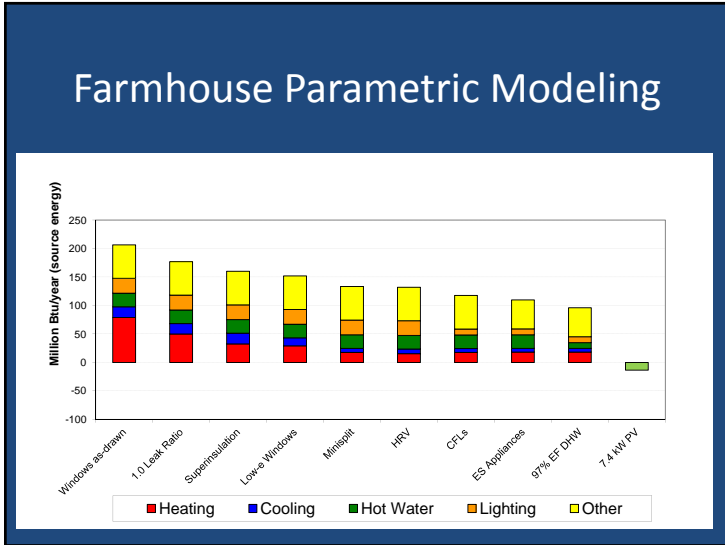


Zero Energy Challenge Home, HERS -4



The Dream Team

- Preparing for a Proposal to MassDevelopment on a project a Devens, a Dream Team of about 15 mostly local building science professionals was assembled.
- Brainstorming session at Betsy and Joe’s barn
- About 25 slides on “The Farmhouse” model
- It took us about 5 hours to get though those slides!





Solar electric panels flush with the roof

MONTH	DAY	CCX	AMT	DEBIT	CREDIT	NET	AMOUNT DUE
MAY 11	0	2	40	35104	99947	99947	0.00
JUN 11	0	2	71	35104	99977	99977	0.00
JUL 11	0	2	46	35104	99977	99977	0.00
AUG 11	0	2	55	09340	33	35	2.00
SEP 11	0	2	45	09340	33	35	2.00
OCT 11	0	2	54	09340	33	35	2.00
TOTAL MONTHLY USAGE: 233 kWh MONTHLY RATE: \$0.0721/kWh MONTHLY CHARGE: \$16.81 MONTHLY CREDIT: \$16.81 MONTHLY NET: \$0.00							

\$551.01 Credit Balance!

Only three months with net electric energy usage

A surplus of 1,574 kWh net energy usage for a 12 month period.

Enough electric energy to run a plug in Prius or Nissan Leaf a majority of the year!



Navien 180 instantaneous hot water heater

**Production
Zero Energy Homes**
 Easthampton, MA
 A 33 home build out project for
 Beacon Communities
 (Transformations, Inc. as General Contractor)

Project Intention:

- To build zero energy “attainable” homes as cost effectively as possible for another developer.
- The project was priced out at Energy Star HERS 85 with another builder 3 years prior.

“The Farmhouse II” Model Home Easthampton, MA

- 1818 square feet of living space
- 3 Bedrooms
- \$120.46 psf including overhead and margin (\$102.26 psf hard costs to build)
- HERS Index of 2



Price Point

Innovations in bringing Zero Energy Homes to the marketplace contribute to this price point:

- ❖ Utilizing the Federal and state PV tax incentives and the new S-RECS
- ❖ Lease or purchased PV systems
- ❖ Cost effective HVAC systems
- ❖ Energy Star incentives of \$8,000 per house



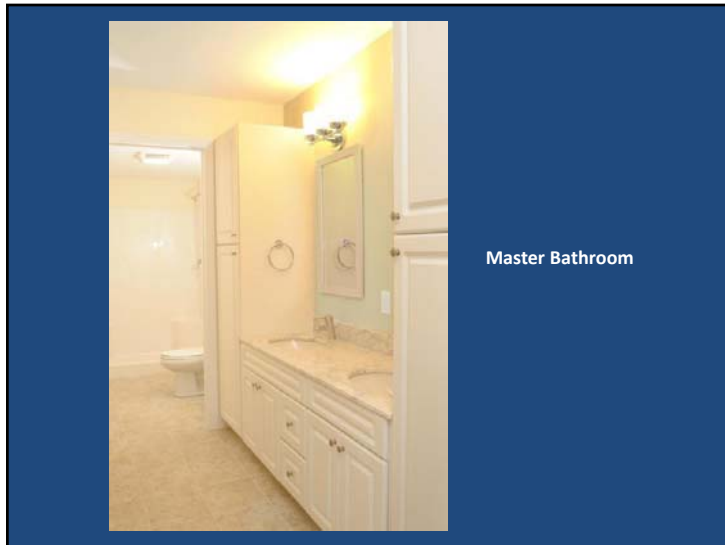
Mitsubishi inside unit

Model #MSZ-FE12NA (One 12,000 BTU head downstairs and one 12,000 BTU head upstairs)



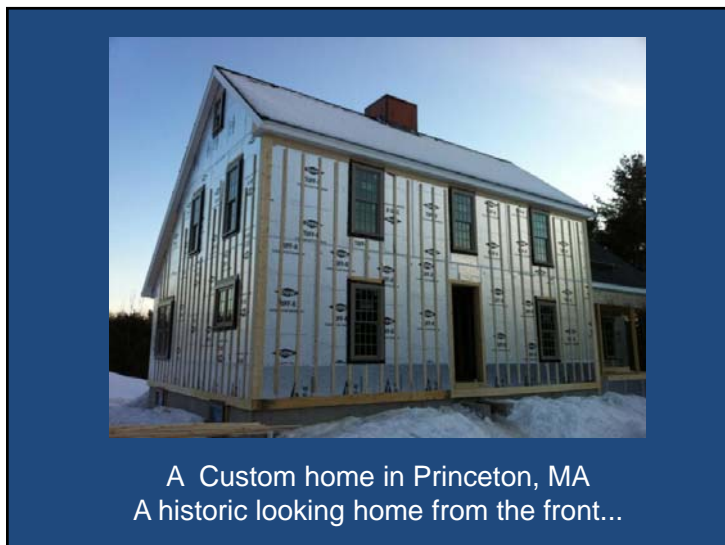
Mitsubishi Outside Units

- Two Model #MUZ-FE12NA condensers
- Set up off the ground



Custom Homes

by Transformations, Inc.





A Custom Home in Stow, MA
15 ½ thick walls, Air infiltration of .50 ACH @50 pascals



A custom Home in Westborough, MA



A focus on healthy indoor air quality

Production Zero Energy & Energy Positive Homes

Devens, MA

(A MassDevelopment Community)
An 8 home speculative development
by Transformations, Inc.

Project Intention:

To build a community of homes that reduce carbon for the building sector and potentially the transportation sector as well



A Customized Saltbox Devens, MA

- 1800 +/- SF 3 Bedroom home
- 18.33 kW PV system
- Custom figures a payback of about 3 years
- HERS Index of -21
- Projected 10,200 kWh of surplus electrical power---enough to power a Nissan Leaf for 30,000 miles!



A Saltbox built on Speculation Devens, MA

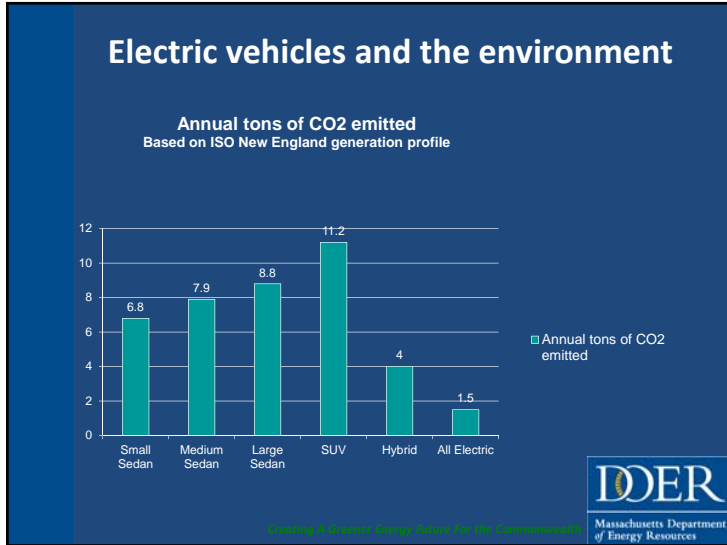
- 1500 +/- SF 3 Bedroom home
- \$341,900 price (for sale now---Harvard, MA schools!)
- Includes 16.32 kW PV system (tax credits and S-RECS go to builder)
- HERS Index of -31
- Projected 10,700 kWh of surplus electrical power---enough to power a Nissan Leaf for 31,500 miles!





Carbon Reduction

- With a HERS 0 home, we reduce the 40% of carbon associated with buildings to just the initial production of them.
- With HERS homes coming in at -21 to -36 range we can start to go after the 40% of the carbon that is associated in the United States with the transportation sector.



Getting to Zero Energy

Questions?

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Zero Energy Homes

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