



Northeast Energy Efficiency Partnerships

ROADMAP TO ZERO NET ENERGY PUBLIC BUILDINGS

PRESENTED BY
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NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS

June 7, 2012

MISSION

APPROACH

the Northeast

A map of the Northeast United States, including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, and Pennsylvania. The map is colored in a solid teal color.

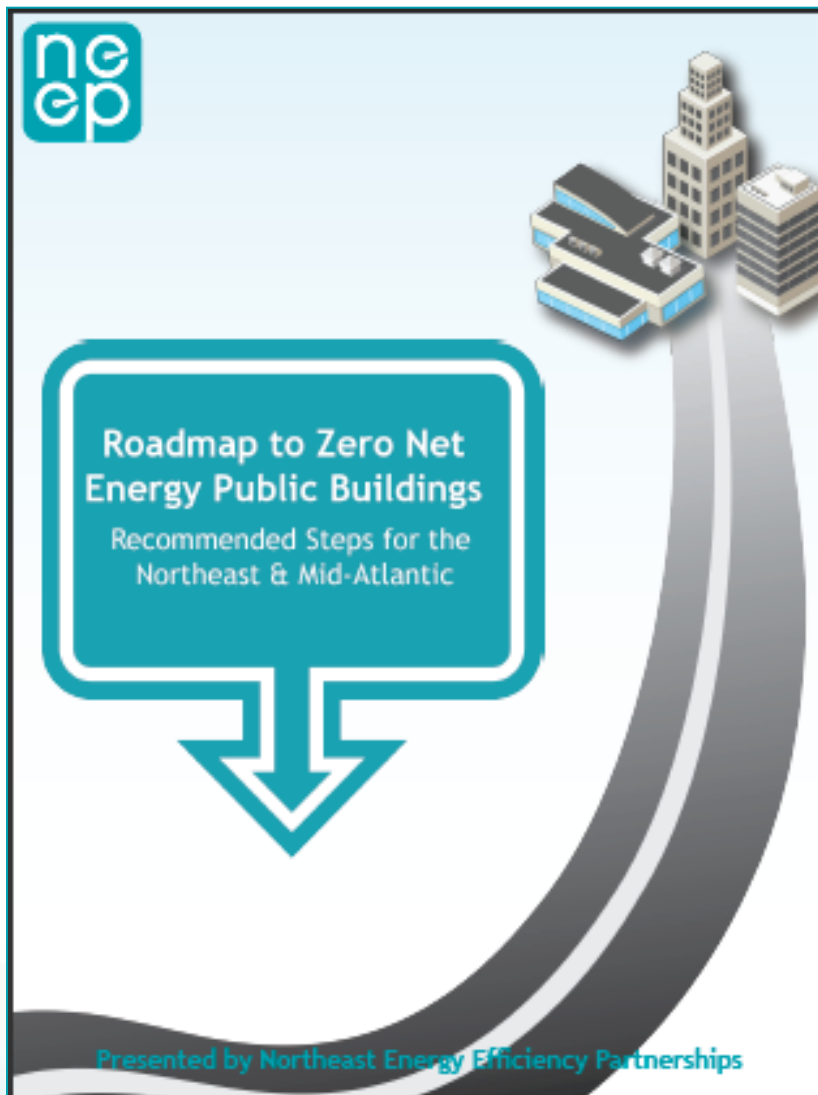
VISION

Transform the way we think about
and use energy in the world around us.

NEEP's vision

The work done today on High Performance Buildings will pave the way for the development of zero net energy buildings, buildings that consume no more energy than they produce, on a broader scale throughout the region.

ROADMAP TO ZERO NET ENERGY PUBLIC BUILDINGS



- New Construction
- Developed with Leadership Group
- **Key steps**
 - Intermediate-term
 - 10-15 years
 - Critical
 - Now

WHAT IS A ZERO NET ENERGY BUILDING?



A zero net energy building produces as much energy as it consumes over the course of a year

WHY PUBLIC BUILDINGS?

The public sector has a responsibility to lead.

The public sector has a longer investment horizon.

INTERMEDIATE-TERM STEPS



Information and Education



Building Energy Codes



Utility Regulation



Finance

CRITICAL NEXT STEPS



STEP 1

Develop a “Path to Highest Performance” Information Campaign

- Bullet-point briefings
- Presentations
- Fact sheets
- Educational modules
 - K-12 and post-secondary curricula
- A public web site

CRITICAL NEXT STEPS

STEP 2



Promote the Continued Development of Exemplary Public Buildings



Courtesy of Rhode Island Department of Education

CRITICAL NEXT STEPS

STEP 3

Prioritize Measurement and Reporting of Public Building Energy Performance

- Ensuring consistent measurement of building energy performance
 - Rate and disclose energy
 - Mandatory
 - Well designed
 - recommendations for possible improvements
 - Benchmarking
 - ENERGY STAR's Portfolio Manager




| Bldg Asset Rating | | | |
|--|------|---|--------------------|
| 100 Cambridge Street, Boston, MA 20114 | | | |
| C | O |  | M |
| US B.A.R. RATING: | | | |
| Square Feet: | | 90,000 | |
| Fuel (Site): | | Natural Gas | |
| Fuel (Source): | | Coal | |
| Carbon: | | 10,000 tons/yr | |
| EUI: | 125 | Regional Average | Performance Rating |
| HVAC: | 45% | 47% | A1 |
| Lighting: | 35% | 33% | A3 |
| Plug Load: | 20% | 20% | B3 |
| Heating System Effic. | 87% | 90% | C1 |
| Building Envelope: | | | |
| Thermal Insulation: | R-35 | R-27 | B3 |
| Air Leakage: | .23 | .29 | B2 |
| Glazing: | | | |
| SHGC | 32 | 25 | A3 |
| U-Value | .28 | .35 | A3 |

Image courtesy of MA DOER⁹

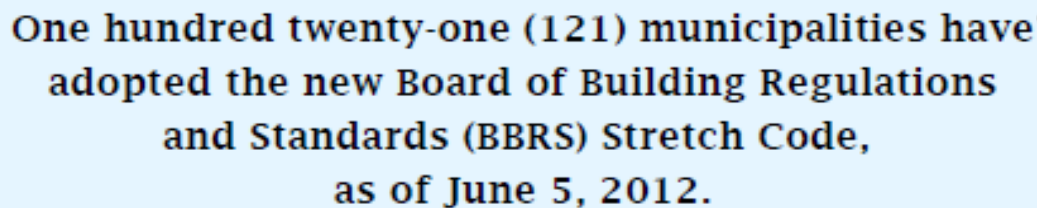
CRITICAL NEXT STEPS

STEP 4



Implement Stretch Building Energy Codes

- Get gradually stricter over time
- Be outcome-based
 - Not relying solely on prescriptive requirements
- Include provisions for continuous commissioning of building systems
- Cover all energy consumed in the building
 - including plug loads as well as major mechanical systems.



CRITICAL NEXT STEPS



STEP 5

Create a Revolving Loan Fund or Similar Mechanism to Provide Capital for Energy Investments

- Budgets in our region grew 12.5 percent from 2008 to 2010
- End of an ARRA
- Initial capitalization an issue
 - fund should be self-sustaining once it is established
 - ESCO's.....?

THE PATH TOWARD ZERO

Begins with.....

- Significant reductions in as-designed building energy consumption
- Building operations that ensure as-designed performance.



Image courtesy of the Putney School, VT



THANK YOU

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