



NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS

STATE WORKSHOP ON INNOVATIONS
IN ENERGY EFFICIENCY POLICY
State-Utility Partnerships to
Increase Energy Efficiency

Presented by
Carolyn Sarno
February 19, 2014

FOR TODAY'S DISCUSSION



- Energy codes best practice
- Beyond codes
- Resources

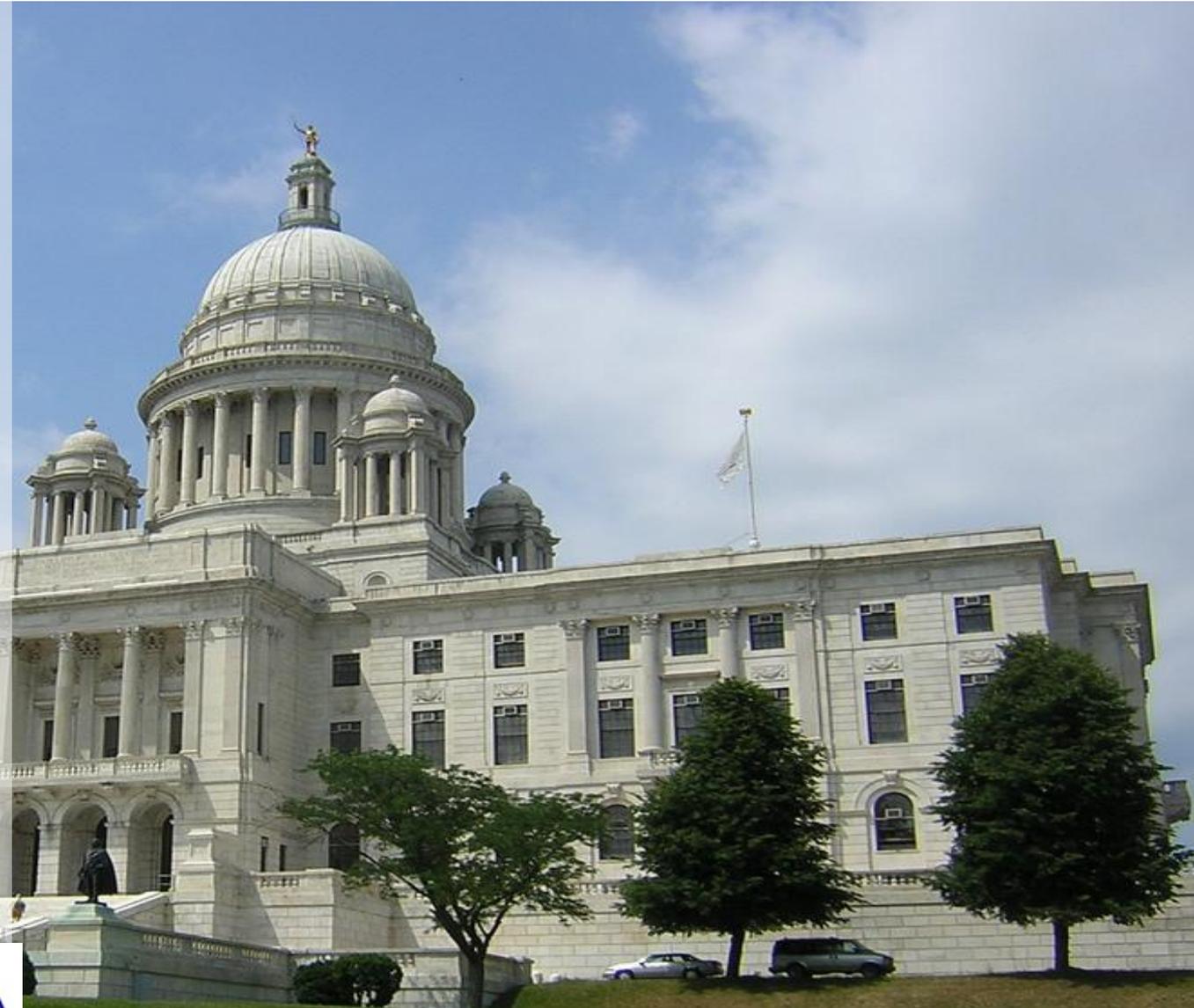


BEST PRACTICE ENERGY CODES

RHODE ISLAND



- Adoption
- Baseline studies
- Compliance
 - Trainings
 - Technical assistance circuit riders
 - 3rd party energy specialists
- Stretch Code



BEST PRACTICE

Beyond energy codes

- **Public Buildings**
 - RIPEP
 - NE-CHPS
- **Standards**



Pell Elementary, Newport RI
The first ZNEC School in the state



RESOURCES

Available at www.neep.org



dunsky energy CONSULTING **neep** Northeast Energy Efficiency Partnerships

**VALUING BUILDING ENERGY EFFICIENCY THROUGH DISCLOSURE AND UPGRADE POLICIES
A ROADMAP FOR THE NORTHEAST U.S.**

A DUNSKY ENERGY CONSULTING REPORT
in collaboration with VERMONT ENERGY INVESTMENT CORPORATION

Philippa Dunsky, *President, DEC*
Jeff Lidberg, *Consultant, DEC*
Emilia Pyska-Sheard, *Senior Consultant, DEC*
Richard Reavy, *Senior Project Manager, VEIC*

For **NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS**

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**GREENING THE PUBLIC SECTOR,
MAXIMIZING ENERGY EFFICIENCY**

Regional Policies Mandating High Performance State-Funded Public Buildings and How to Maximize Their Energy Efficiency

Prepared by:
EBC, Inc.
125 Railroad Road
Haverhill, MA 01830

For:
High Performance Schools and Public Buildings
Northeast Energy Efficiency Partnerships

**NE-CHPS
NEW CONSTRUCTION
MAJOR RENOVATION
Version 2.0**

3.0 Coming March 2014

Prepared by:
EBC, Inc.
125 Railroad Road
Haverhill, MA 01830

For:
High Performance Schools and Public Buildings
Northeast Energy Efficiency Partnerships

FINAL REPORT

Attributing Building Energy Code Savings to Energy Efficiency Programs

February 2013

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Building Energy Rating and Disclosure Policies Update and Lessons From the Field

Northeast Energy Efficiency Partnerships
February 2013

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Roadmap to Zero Net Energy Public Buildings
Recommended Steps for the Northeast & Mid-Atlantic

Presented by Northeast Energy Efficiency Partnerships

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Regional Operations & Maintenance Guide for High Performance Schools and Public Buildings in the Northeast and Mid-Atlantic

Strategies for creating green, healthy & energy efficient existing buildings in your state or local government

August 2013

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Model Progressive Building Energy Codes Policy
2012 Update

Northeast Energy Efficiency Partnerships
November 2012

BEST PRACTICE: SCHOOLS, CODES & BER



Keene Middle School

Keene, New Hampshire

General Information

Location: 167 Maple Avenue Keene, NH 03431
 Scope: 173,000 square feet
 Cost: \$35,800,000
 Completion: 2011
 Enrollment: 750 students, grades 6 to 8 (core capacity of 1,000 students)
 Architect: Frank P. Marinace / Architect, P.A.
 Engineer: Kohler & Lewis
 Certification: NE-CHPS

Project Overview:

The construction of the new Keene Middle School commenced in 2009 after being approved by voters earlier that year. The project includes the construction of a state-of-the-art high performance school, as well as the addition of a 14,000 square foot office for the School Administrative Unit (SAU) #29. Building the SAU concurrently with the middle school yielded an integrative site design and significant savings in construction costs. The new building achieves 33.6 kBtu/sq. ft.

The 173,000 square-foot, two-story school facility has a capacity of 1,000 students which opened in 2011 not only incorporates a wide-range of "green" design element and high performance features, but also provides extensive outdoor playing fields that were lacking at the existing school. By meeting the Northeast Collaborative for High Performance Schools (NE-CHPS) criteria, the Keene Middle School was eligible to receive an additional 3 percent aid from the New Hampshire Department of Education.

High-performance features include:

- Wood-chip heating plant
- Low-flow fixtures
- High level of thermal insulation
- Reflective roof surface,
- Extensive daylighting
- High efficiency heat recovery system
- Energy management system

The design of the school also incorporates several eco-friendly features including rain gardens, high-efficiency field irrigation, and a 30,000 gallon rainwater harvesting system.

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Roger L. Putnam Vocational Technical Academy

Springfield, Massachusetts

General Information

Location: 1300 State St. Springfield, MA 01109
 Scope: 315,000 square feet
 Cost: \$114,303,152
 Completion: 2012
 Enrollment: 1,632 students, grades 9th to 12th
 Certification: MA-CHPS

Project Overview:

The new Putnam Vocational Technical Academy in Springfield, Massachusetts opened in September 2012 to accommodate over 1,600 students in grades 9 to 12. Replacing the 73 year-old facility, the state-of-the-art, 315,000 square-foot facility was designed to meet the state-adopted Massachusetts Collaborative for High Performance Schools (MA-CHPS), a program that is actively advancing the design and construction of high performance schools that reduce the use of energy, water, and other materials while creating a healthy school environment.

Project Team:

Owner's Project Manager (OPM): ARCADIS US, Inc.
Construction Manager & Risk Firm: Consigli/Morganti, Joint Venture
Architect/Engineer: Drummy Rosane Anderson (DRA) Architects, Inc.

Project Funding:

The City of Springfield/Massachusetts School Building Authority's (MSBA) reimbursement rate was 90 percent. Initial project savings back to the MSBA in 2010 was \$11 million in total project savings. The MSBA reinvested \$10 million of the savings back to the City of Springfield for the historic renovation of the Forest Park Middle School project.

In March 2013, the project earned the city of Springfield rebates totaling approximately \$190,000 from Western Massachusetts Electric Company (WMECo).

Building Green School Facilities in MA

In 2009, Massachusetts became one of the first states to adopt the Collaborative for High Performance Schools (CHPS) criteria for its education facilities. Besides an emphasis on efficient energy consumption, the program looks to actively reduce the use of water and materials while reducing operating costs.

The state requires all Massachusetts School Building Authority-funded schools (even if it does not apply for MA-CHPS verification) to meet minimum levels of sustainability standards, including energy efficiency, materials selection, indoor environmental quality, and operations and maintenance. A school can meet these requirements by attaining 40 points in MA-CHPS for new construction, 35 points for renovation.

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**STATE BUILDING ENERGY CODE COMPLIANCE STUDIES
— LESSONS LEARNED**

What is Building Energy Code Compliance?

States must develop and implement a plan, including training and enforcement provisions, to achieve at least 90 percent compliance with the national model energy code (2009 IECC or greater) by 2017, in order to comply with Section 410(a) of the American Recovery and Reinvestment Act (ARRA). Code compliance refers to training, outreach, implementation support, and enforcement, of building energy codes. The Institute for Market Transformation (IMT) has shown that for every dollar spent on code compliance and enforcement efforts, there is a six dollar return in energy savings. Compliance with energy codes is essential for reaching their intended, potential energy savings. Effective compliance and enforcement unlocks deeper energy savings, reduced costs, higher building resale value, and minimized environmental impacts. According to the U.S. Department of Energy (DOE), the single most important step to reducing energy use in buildings is to implement and enforce compliance with building energy codes. In order to achieve at a minimum 90 percent compliance, jurisdictions and states must first develop a baseline compliance rate. This case study presents lessons learned from these efforts.

Efforts to Address Building Energy Code Compliance

The key to realizing the full benefits associated with building energy codes is through compliance verification. The DOE's Building Energy Codes Program (BCEP) developed guidelines, training materials, and tools to help states meet the code-compliance requirements of ARRA, and to ultimately improve energy efficiency. These tools, such as COI/Check, RE-Scheck, Soore + Store, and State Sample Generator tool, among others, help the building industry document and verify compliance with energy codes. The DOE funded pilot studies in several states to measure their baseline code compliance rates. The DOE works with five of the regional energy efficiency organizations (REEOs) and Pacific Northwest National Laboratory (PNNL) to test methodologies for evaluating state energy code compliance. According to the BCEP 2011 Annual Report, since 2010, BECP has launched nine state and regional compliance pilot studies (Georgia, Idaho, Iowa, Massachusetts, Montana, Oregon, Utah, Washington and Wisconsin), which included comprehensive training on conducting a compliance assessment using BECP developed software tools. The scope of work completed in these states include surveying building code officials, field inspections, plan reviews, outreach to building officials, energy use intensity comparisons, inspector interviews, PNNL checklists, and HERS ratings. The following lessons learned were gathered from participants of the DOE Pilot Compliance studies, as well as participants in state funded compliance studies, such as New York, New Hampshire, and Maine.

MODEL PROGRESSIVE BUILDING ENERGY CODES POLICY — 2012 UPDATE

AVAILABLE AT WWW.NEEP.ORG

DOE Technical Information for Solid State Lighting (TINSSL)



Why LED lighting?

Since 2003, the U.S. Department of Energy has invested with industry partners in research and development of solid-state lighting (SSL)—including both light-emitting diode (LED) and organic light emitting diode (OLED) technologies.

Using LEDs

While LEDs are well suited to a variety of lighting applications, in the rapidly changing LED marketplace, "do your homework" remains the watchword.

Technology Factsheets

Fact sheets describing solid-state lighting, its characteristics, applications, and issues relating to its successful introduction into the marketplace.

NEEP partners with U.S. DOE to promote Solid State Lighting Information and Resources

Resources on Standards including Design Guidance

[Performance of T12 and T8 Fluorescent Lamps and Troffers and LED Linear Replacement Lamps Study](#)



THANK YOU

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