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SUBJECT: Update on Sustainable Building Design Guidelines and Policy Recommendations  
DATE: February 8, 2017

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## **Introduction**

Federal and state standards continue to require increasing levels of energy efficiency within the energy code and building code used in the design of educational facilities in Massachusetts. Staff is monitoring recent changes to these standards, and is recommending revisions to the current practices associated with its Sustainable Building Design Guidelines. This memorandum provides a background of current policy requirements and presents a recommendation for consideration related to the recent energy code updates.

## **Summary**

Since its formation, the Massachusetts School Building Authority (“MSBA”) has been an advocate of “Green” sustainable building design for all MSBA-funded public K-12 school buildings. Under current policy, MSBA guidelines include a base level of sustainable requirements for all Core Program projects and also include conditional provisions that may award a school district an additional 2% of a project’s eligible costs if the project achieves higher levels of sustainability using the established criteria.

With assistance from a technical services consultant, MSBA staff analyzed current policy and various proposed policy options by performing the following tasks:

- Developed a matrix of policy options that explore requirements. For each option, considered advantages and disadvantages for MSBA and Districts;
- Compared current and upcoming Massachusetts energy codes and the “Stretch” energy code performance requirements;
- Benchmarked these energy codes and “Stretch” energy code to the current national and regional sustainable standards such as US Green Building Council and Northeast Collaboration for High Performance Schools;
- Reviewed potential minimum “best practices” standards to adjust for code updates, and further considered potential additional reimbursement for districts that elect to achieve higher levels of energy efficiency;
- Conducted outreach meetings with design consultants and related organizations to receive feedback from professionals that have direct experience with these sustainable requirements; and,
- Continue to develop a matrix of policy options to explore incentive points.

Included with this memo is a more complete description of current MSBA Sustainable Building Design Guidelines, a proposed updated policy recommendation for consideration, a graphic

diagram showing energy standard comparisons, and a timeline indicating recent building code and energy code standards.

## **Background**

As of January 2017, 128 Massachusetts School Building Authority (“MSBA”) Core Program projects have registered with either the Collaborative for High Performance Schools or United States Green Building Council, with 80 of the 128 projects completed. The total additional reimbursement from the MSBA through this program to date is roughly \$115 million, averaging over a million dollars per project, or roughly \$6.75 of additional funding per square feet of construction. Although MSBA sustainable design policy emphasizes increased energy efficiencies, it also supports more efficient transportation costs, lower water consumption, reduced use of materials, and encourages a quality educational indoor environment.

Federal and state standards continue to require increasing levels of energy efficiency with a goal of “Zero Net Energy Buildings” by 2030. The US Department of Energy, using statutory authority within the Energy Conservation and Production Act, requires each state to analyze and ultimately conform to the most recent edition of the two national model energy codes: the American Society of Heating, Refrigerating and Air-Conditioning Engineers Energy Standard for Commercial Buildings (“ASHRAE 90.1”) and the International Energy Conservation Code (“IECC”) by updating their state energy codes within a reasonable period of time. In response to these increased standards and in order to promote more sustainable building practices, the US Green Building Council introduced LEED for Schools (“LEED-S”) Version 4 in 2013 and the Collaborative for High Performance Schools introduced Northeast CHPS Version 3 (“NE-CHPS 3.0”) in 2014. Both of the increased energy efficiency standards used in these criteria are based on the 2012 edition of the International Energy Conservation Code or its ASHRAE 90.1 2010 equivalent. These revisions establish levels of efficiency and sustainability well above previous standards.

In order to meet its targeted goals, Massachusetts adopted the 2012 International Energy Conservation Code in July 2014, and more recently, in August 2016, amended its 8th edition of the state's building code to include the 2015 International Energy Conservation Code and an updated Massachusetts “Stretch” energy code. These most recent changes took effect in January, 2017. The adoption date of the state's new 9th edition building code is undetermined at this time, and may include a concurrency period of up to six months.

## **Current MSBA Sustainable Schools Policy**

At the March 25, 2015 MSBA Board of Directors meeting, the MSBA Board approved staff recommendations to update its existing policy by requiring all new construction and major renovation/addition Core Program projects funded by the MSBA to participate in the High Efficiency Green School Program by achieving, at a minimum, and for no additional reimbursement, the levels of certification noted below, including energy efficiencies of 10% above the building code current at that time. Districts that attempt 2% additional reimbursement

points through this program are required to achieve higher levels of sustainable achievement, including energy efficiency at approximately 15% above the building code current at that time (with considerations for addition/renovation vs. new construction). This became effective for all Core Program projects seeking Preferred Schematic approval on or after July 29, 2015.

## **Discussion**

The LEED-S and NE-CHPS criteria have served as the basis for sustainable standards in the MSBA High Efficiency Green School Program. Both are national or regional standards which do not necessarily align with current or future Massachusetts energy code requirements. Because the current versions of LEED-S and NE-CHPS use the 2012 edition of the International Energy Conservation Code (or the equivalent 2010 ASHRAE 90.1), and the recently updated Massachusetts energy code requires compliance with the 2015 edition as of January, 2017, the new Massachusetts base energy code requirements will be closer to the levels of increased energy efficiency that would provide a district with 2 points of additional reimbursement in the current MSBA program. For this reason, MSBA staff is recommending for Board consideration revisions to its policy to align with the latest updates to the Massachusetts energy code.

For projects that have a budget and scope of work limited to repairs, minor renovations, or small additions relative to the size of the overall existing building, the MSBA recognizes that meeting energy efficiency standards intended for major renovation and replacement projects may not be feasible (it is the responsibility of the design professionals, in conjunction with the local authorities having jurisdiction, to determine the minimum energy efficiency requirements for a renovation project). Therefore, the MSBA, at its sole discretion and after review with the District, may allow a Core Program project to proceed without meeting the minimum requirements of the MSBA Green School Program described above. However, all new construction is required to incorporate sustainable design features to the extent required by the new energy code.

Similar to the 2015 MSBA High Efficiency Green School Program, staff is recommending that all new construction and major renovation/addition Core Program projects must comply with minimum “best practices” for sustainable design, for no additional reimbursement, by achieving certification at the basic levels of sustainability as defined by either the LEED-S or NE-CHPS programs, and exceed the base Massachusetts energy code by 10% using the LEED-S or NE-CHPS submittal to substantiate this level of energy efficiency.

In order to receive 2% additional reimbursement points through this program, Districts will be required to achieve higher levels of energy efficiency at 20% above the current Massachusetts base energy code, using the LEED-S or NE-CHPS submittals to substantiate this additional reimbursement.

In recognition of the potential future updates to the LEED-S and NE-CHPS criteria, the recommended policy described below refers to the *most current* editions of these standards rather than specific versions or editions.

**Recommendation**

As presented at the Facilities Assessment Subcommittee on February 1, 2017, MSBA staff recommends that all new construction and major renovation/addition Core Program projects requesting Preferred Schematic approval on or after June 28, 2017, must comply with the following revised High Efficiency Green School Program:

1. Minimum requirements for all new construction and major renovation/addition Core Program projects funded by the MSBA, for no additional reimbursement:
  - Using the most current LEED-S, achieve a minimum of “Certified”,  
OR;
  - Using the most current NE-CHPS, achieve a minimum of “Verified”.  
AND;
  - Exceed the level of energy efficiency required in the current Massachusetts (base) energy code by 10%, using the LEED-S EA “Optimize Energy Performance” credit submittal or the NE-CHPS “Energy Efficiency” credit submittal to demonstrate that performance.
  
2. For 2% additional reimbursement, and in addition to the minimum requirements described above, projects must exceed the level of energy efficiency required in the current Massachusetts (base) energy code by 20%, using the LEED-S EA “Optimize Energy Performance” credit submittal or the NE-CHPS “Energy Efficiency” credit submittal to demonstrate that performance.

The requirement to comply with the current policy remains in effect for all Core Program projects that request Preferred Schematic approval before the June 28, 2017 MSBA Board meeting.

**MSBA Sustainable Schools Policy**

*(In addition to 963 CMR, 2.04 General Site and School Construction Standards), and using the most current editions of either LEED-S or NE-CHPS*

**Minimum Requirements**

<b>Current 2015 Policy</b>	<b>Proposed 2017 Policy</b>
Using LEED-S V4, for no additional reimbursement, achieve a minimum of “Certified” (40 points), including a minimum of 3 points in EA Credit “Optimize Energy Performance.”  OR;  Using NE-CHPS 3.0, for no additional reimbursement, achieve a minimum of “Verified”	Using LEED-S, for no additional reimbursement, achieve a minimum of “Certified”,  OR;  Using NE-CHPS, for no additional reimbursement, achieve a minimum of “Verified”.  AND;  Exceed the level of energy efficiency required in the

(110 points for new construction or 85 points for addition / renovation), including 6 points in EE Prerequisite #1.0.	current Massachusetts (base) energy code by 10%, using the LEED-S EA “Optimize Energy Performance” credit submittal or the NE-CHPS “Energy Efficiency” credit submittal to demonstrate that performance.
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**Additional Reimbursement**

<b>Current 2015 Policy</b>	<b>Proposed 2017 Policy</b>
<p>Using LEED-S V4, for 2% additional reimbursement points, achieve a minimum of “Silver” (50 points), including a minimum of 6 points in EA Credit “Optimize Energy Performance.”</p> <p style="text-align: center;">OR;</p> <p>Using NE-CHPS 3.0, for 2% additional reimbursement, achieve a minimum of “Verified” (110 points for new construction or 85 points for addition / renovation), including a minimum of 9 points in EE Credit #1.1.</p>	<p>In addition to the minimum requirements described above, projects must exceed the level of energy efficiency required in the current Massachusetts (base) energy code by 20%, using the LEED-S EA “Optimize Energy Performance” credit submittal or the NE-CHPS “Energy Efficiency” credit submittal to demonstrate that performance.</p>

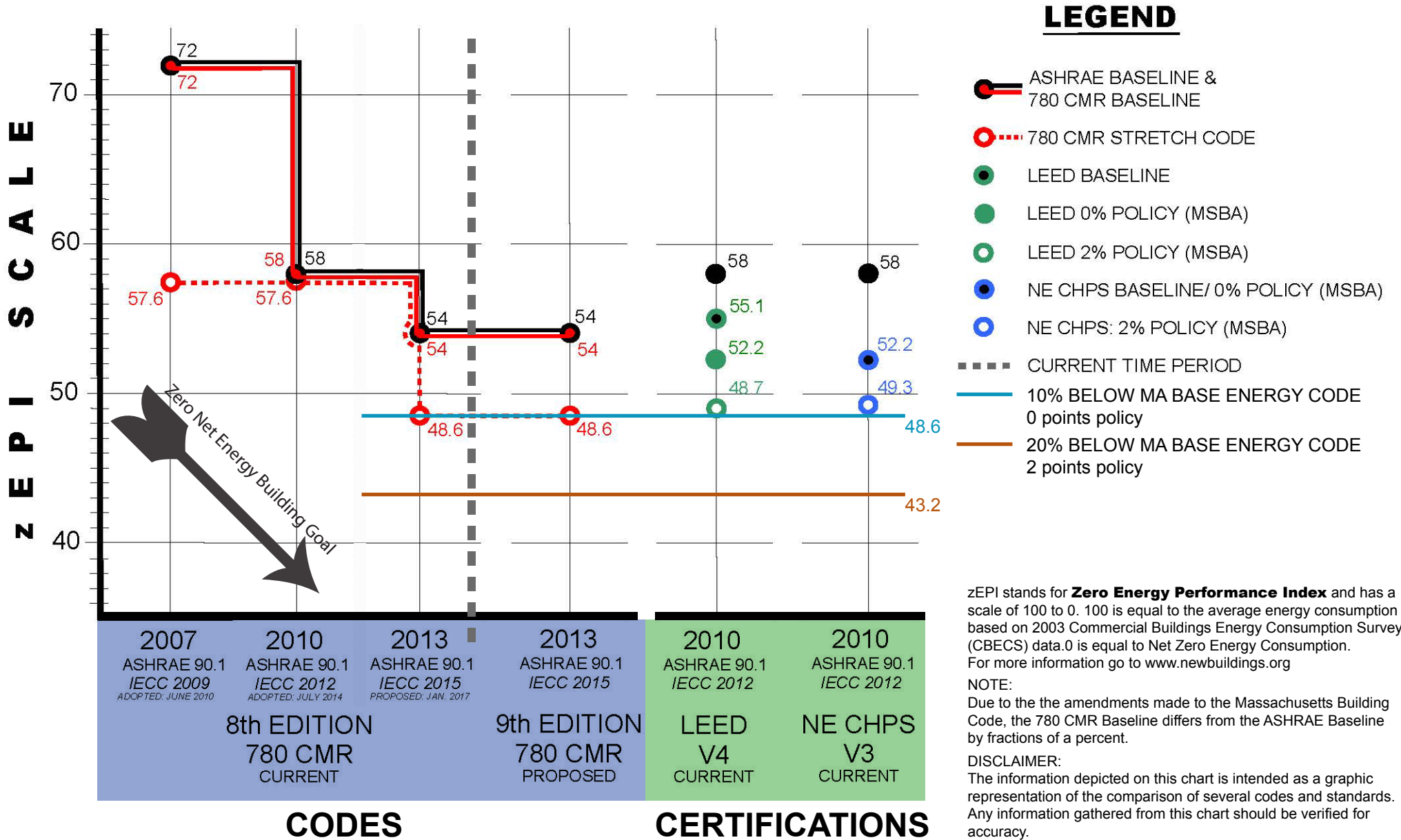
The MSBA will continue to monitor advancements in the industry and the effectiveness of MSBA policy to support the sustainable qualities of the schools in Massachusetts. Additional potential updates to the incentive points relating to the sustainable policy are still under review and staff will be proposing these recommendations for consideration to the MSBA Board of Directors meeting on or before August 23, 2017.

Included with this memorandum are:

- Attachment 1- Energy Standards Comparison
- Attachment 2- Massachusetts Building Code & Energy Code Timeline

ATTACHMENT 1

# ENERGY STANDARDS COMPARISON



# Attachment 2- MA State Building Code & Energy Code Timeline

