

MEMORANDUM

TO: Board of Directors, Massachusetts School Building Authority
FROM: James A. MacDonald, First Deputy Treasurer, Chief Executive Officer
John K. McCarthy, Executive Director, Deputy Chief Executive Officer
SUBJECT: Recommendation to Update the MSBA Green Schools Program Policies
DATE: June 14, 2023

Introduction

The Massachusetts School Building Authority (the “MSBA”) has reviewed information related to upcoming changes to the building code and indoor air quality that may affect the MSBA’s Green Schools Program. This memorandum provides a summary of this review and makes a recommendation to the MSBA’s policy that will affect all new construction and major renovation/addition Core Program projects requesting Preferred Schematic approval after the June 21, 2023 MSBA Board meeting.

Background

Since its formation, the MSBA has been an advocate of “green” sustainable building design for all MSBA-funded public K-12 school buildings and has regularly adjusted its Green Program Policy since then to promote increasing levels of energy efficiency in school design in alignment with the state’s goals to move toward net-zero buildings. Since the beginning, the MSBA has updated its Green Schools Program Policies to incorporate four revisions to building codes, three versions of the US Green Building Council’s LEED for Schools (“USGBC LEED-S”) and six versions of the Northeast Collaborative for High Performance Schools (“NE-CHPS”) requirements. Since 2010, the MSBA has required all projects to exceed base code in energy efficiency by 10% and, in 2017, the MSBA updated its incentive points for projects to exceed base code in energy efficiency by 20%.

As of June 2023, 220 MSBA Core Program projects have registered with the US Green Building Council’s LEED for Schools (“USGBC LEED-S”) or Northeast Collaborative for High Performance Schools (“NE-CHPS”). Industry advancements over the last decade have supported the efforts of districts and designers to strive for increasingly higher levels of energy efficiency toward goals of net zero. In the last ten years, 95% of the MSBA-funded schools have exceeded MSBA’s base project requirements with one school achieving LEED “Platinum”, 27 schools achieving LEED “Gold”, and 47 schools achieving LEED “Silver”. Additionally, the MSBA has learned that of the buildings evaluated through its post occupancy evaluation program who track Energy Use Intensity (“EUI”), 80% consume less energy on site than the Energy Star K-12 National Median. To date, the total additional MSBA investment through incentive points for this program is approximately \$225 million, averaging about \$1.25 million dollars per project. In addition to an emphasis on increased energy efficiency and improved indoor air quality, the MSBA’s Green Schools Program encourages sustainable site development, efficient transportation costs, reduced water consumption, sustainable use of materials, and a higher quality educational environment.

Discussion

Staff have reviewed new information that could affect the MSBA's Green Schools Program policies and have taken a closer look at the benefits and challenges of two items:

- Upcoming changes to the Massachusetts building code and energy codes; and
- Improving indoor air quality.

Upcoming changes to the Massachusetts building code and energy codes

Federal and state standards continue to require increasing levels of energy efficiency with a goal established in Massachusetts of “Net Zero Greenhouse Gas Emissions” by 2050. To meet its targeted goals, Massachusetts is scheduled to adopt the 2021 International Energy Conservation Code (“IECC”) on July 1, 2023 as a part of the new 10th edition of the state's building code. The Massachusetts Department of Energy Resources (“DOER”) recognizes the significance of these updates and over the last 18 months, have requested detailed input from the public, other state agencies, and consultants in the building design professions. Ongoing conversations have included discussions of some of the challenges including the change in measurement of energy efficiency from a long-standing measurement of Energy Use Intensity (“EUI”) to Thermal Energy Demand Intensity (“TEDI”), parameters of the new measurement and its effect on energy model uses and the accuracy of outcomes, the capacity of the electrical grid and the sources of potentially fossil-fuel based generation of electricity, impact of tighter building enclosures on indoor air quality, operational costs of an all-electric building, increased understanding of local officials and building inspectors, independent certification of achieving new code requirements, availability of technology, equipment, experienced firms and contractors in the public sector and the construction cost associated with these new requirements.

After July 1, 2023, the state will allow three levels of optional energy codes that can be adopted by communities in Massachusetts:

- Base energy code – This code level is based on the newer 2021 IECC and the 2019 ASHRAE 90.1.
- Stretch energy code – This code level uses Thermal Energy Demand Intensity (“TEDI”) as a measurement of thermal energy required by a building for space heating and cooling. The TEDI measurement is intended to minimize heating demand with improved exterior envelope and mechanical systems. One of the strategies uses the “Passive House” compliance pathway that also emphasizes minimal mechanical systems, additional exterior envelope insulation, and tighter air infiltration systems.
- Specialized energy code – In addition to the Stretch code standards, this level has three alternatives: 1) all electric heating and cooling and water heating; 2) mixed fuel sources with the project prewired for all-electric; or 3) the building is designed for Net Zero Energy performance.

As of June 5, 2023, 283 of the 351 communities in Massachusetts have adopted the Massachusetts “Stretch Energy Code” as their basis of energy code standards, and seventeen communities have adopted the “Specialized Stretch Code”. For 13 of the 17, this code will not

be in effect in their community until on or after January 2024. DOER anticipates more communities will adopt the new Specialized Stretch Code as this option becomes more familiar to municipalities.

Based on the achievement of school designs to date and that over 300 of the 351 Massachusetts communities are stretch code communities, staff are recommending that the MSBA's base requirement for all projects be updated to include the requirement to meet the new more stringent stretch energy code. In addition, to continue to promote advancement of MSBA-funded public K-12 school buildings toward the states established energy goals and in recognition of the evolving state code, staff recommends modifying the MSBA's Green Schools Program to incentivize districts to target the specialized energy code and increase the current incentive point for projects with a higher than code level of energy efficiency from 2% to offer incentive points of 3% for projects constructed in accordance with the specialized energy code..

Improving Indoor Air Quality

The MSBA has recognized developments regarding the quality of indoor air in buildings with tighter exterior envelopes and increasing levels of thermal insulation to comply with more stringent energy codes. There are categories within the LEED-S and NE-CHPS sustainability standards that address indoor air quality, and more specifically those that require identification and reduction of chemical products used in school construction that may present a hazardous environment for building occupants. Related categories in the LEED-S and NE-CHPS standards also address a controlled building ventilation "flush-out" and air testing that can help remove any volatile organic compounds from the building before occupancy.

In July 2022, the MSBA updated the Green Schools policy to include a new requirement that all Core Program projects meet a minimum number of points from among these indoor air quality categories. With that recent update, the MSBA encouraged school districts and their design teams to specify products that conform to material transparency through product disclosures, specify products that do not include these chemicals, and encourage air testing and building flush-out. As noted in the July 2022 Board memo, the staff continued its review of the Green Policy and as a result recommends providing additional reimbursement for any project that can achieve higher levels of indoor air quality that exceed these required minimum standards, using the same LEED-S and NE-CHPS criteria.

Recommendation

As presented at the Facilities Assessment Subcommittee on May 17, 2023, and the Board Business meeting on May 24, 2023, staff recommends that all new construction and major renovation/addition Core Program projects requesting Preferred Schematic approval after June 21, 2023, must comply with the updated Green Schools Program as described below (see highlighted sections):

MSBA Green Schools Program Policy

(changes noted in blue highlight below)

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

Minimum Requirements

Current / 2022 Policy	Proposed / 2023 Policy
<p>Using LEED-S, for no additional reimbursement, achieve a minimum of “Certified,” including a minimum total of three points (from seven points available) from the following three categories:</p> <ul style="list-style-type: none"> • MR Building Product Disclosure and Optimization - Material Ingredients • IEQ - Low Emitting Materials • IEQ – Indoor Air Quality Assessment <p>OR;</p> <p>Using NE-CHPS, for no additional reimbursement, achieve a minimum of “Verified”, including a minimum total of five points (from ten points available) from the following four categories:</p> <ul style="list-style-type: none"> • EQ 5.1.3 Indoor Air Quality Management – Building Flush Out • EQ 7.0 Low Emitting Materials • EQ 7.1 Additional Low Emitting Materials • MW 10.1 Health Product Information Reporting <p>AND;</p> <p>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.</p>	<p>Using LEED-S, for no additional reimbursement, achieve a minimum of “Silver,” including a minimum total of three points (from seven points available) from the following three categories:</p> <ul style="list-style-type: none"> • MR Building Product Disclosure and Optimization - Material Ingredients • IEQ - Low Emitting Materials • IEQ – Indoor Air Quality Assessment <p>OR;</p> <p>Using NE-CHPS, for no additional reimbursement, achieve a minimum of “Verified”, including a minimum total of five points (from ten points available) from the following four categories:</p> <ul style="list-style-type: none"> • EQ 5.1.3 Indoor Air Quality Management – Building Flush Out • EQ 7.0 Low Emitting Materials • EQ 7.1 Additional Low Emitting Materials • MW 10.1 Health Product Information Reporting <p>AND;</p> <p>Meet the minimum energy efficiency requirements described in the MA DOER “Stretch Code Green Community” standards.</p>

Additional Reimbursement

Current / 2022 Policy	Proposed / 2023 Policy
<p>For an additional reimbursement of 2% of the Estimated Basis of Total Facilities Grant, 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.</p>	<p>For an additional reimbursement of 3% of the Estimated Basis of Total Facilities Grant, and in addition to the minimum requirements described above, projects must meet the minimum energy efficiency requirements described in the MA DOER “Opt-in Specialized Code” standards.</p> <p>For an additional reimbursement of 1% of the Estimated Basis of Total Facilities Grant, and in addition to the minimum requirements described above, projects must achieve a minimum total of five points (from seven points available) in the LEED indoor air quality points noted above, or a minimum total of eight points (from ten points available) in the NE-CHPS indoor air quality points noted above.</p>

Policy Implementation

At the sole discretion of and after consultation with the MSBA, those projects that have Preferred Schematic approval on or before the June 21, 2023 MSBA Board meeting but do not have Project Scope and Budget approval will have the option to comply with either the 2022 Green Schools Program Policy or the 2023 Green Schools Program Policy. The requirement to comply with the current 2022 policy remains in effect for all Core Program projects that requested Project Scope and Budget approval on or before the June 21, 2023 MSBA Board meeting. For projects that predate 2022, refer to the Green Schools Program policies in place at the time. Please note that only the 2023 policy includes the incentive point for indoor air quality.

For projects that have a budget and scope of work limited to, 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 remains 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 for minor renovation or a small addition to proceed without meeting the requirements of the MSBA Green Schools Program.

As with previous MSBA Green Schools Program policies, incentive points provided by the MSBA are provisional, subject to the district meeting certain sustainability requirements for the project. If the District does not meet these requirements, the district will not qualify for these incentive points, and the MSBA will adjust the reimbursement rate accordingly.