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CELEBRATING 55 YEARS

Mass. green schools are minimizing impact on the environment and less costly to operate

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There has been a huge shift in public awareness about the importance of reducing our "ecological footprint" and our dependence on fossil fuels. Construction of green buildings that cut down on energy use, water use and waste is on the rise. These buildings play a vital role in conserving the earth's natural resources. One of the most important sectors of green building construction is the development of high-performance green schools, which not only minimize the school's impact on the environment, but are also less costly to operate and provide an enhanced learning and working environment for students, teachers and staff.

According to a study conducted by HMFH Architects, Inc. and the Vermont Energy Investment Corp., green schools cost on average 3% more to build. However, Mass. offers excellent incentive programs that often cover over 75% of this incremental cost, resulting in a net average incremental cost of only 0.8%. The study shows that the benefits over 20 years substantially outweigh the costs by 6.4 times. As with most green investments, looking beyond the up-front costs of green upgrades and analyzing the lifecycle costs of the school can yield impressive long-term savings in energy, water, and maintenance.

High-performance green schools are highly encouraged throughout Mass. In addition to the funding offered by gas and electric utility providers, the Mass. Renewable Energy Trust (Trust) and the Mass. School Building Authority (MSBA) offer a variety of financial incentives. The Trust offers the Green Schools Initiative which provides Design Grants for up to $100,000 for energy, acoustic and daylight modeling, "green team" support, and renewable energy system design to eligible school districts. A school that has been verified as a Massachusetts High-Performance Green School (through the Mass. Collaborative for High Performance Schools (MA-CHPS) or the USGBC's LEED for Schools program) is then eligible to receive a Trust Installation Grant for up to $300,000 for a renewable energy system and may also qualify for an additional 2% reimbursement from the MSBA.

The schools on tour at the Greenbuild International Conference and Expo in Boston this November are great models of schools that demonstrated environmentally responsible site selection and site development, installed water- and energy-efficient technologies and renewable energy systems, used environmentally-friendly materials and achieved excellent indoor environmental quality.

The Michael E. Capuano Early Childhood Center in Somerville is a LEED certified school that uses skylights, clerestory windows, light shelves, site selection, and classroom design to create extensive daylighting, which significantly reduces the costs of electrical lighting. The designers chose carpeting, insulation and ceiling tiles that reduce mold and mildew and low volatile organic compound (VOC) paints and wood that minimize air pollution. The natural lighting and excellent

indoor air quality has succeeded in improving the health and productivity of both students and staff.

The city of Waltham built the William F. Stanley Elementary School with efficient lighting techniques, water-conserving fixtures and high-efficiency boilers and mechanical systems, resulting in a building that beats energy code by 28%. By installing numerous bicycle racks and positioning itself on a bus line and .5 miles from a commuter rail station, this LEED Silver school also highly encourages alternate modes of transportation.

The Whitman-Hanson Regional High School received MA-CHPS verification and includes many green features, such as a well-insulated building envelope that helps to reduce energy and heat loss, a white roof to minimize excessive heat gain and smart site planning. By integrating the building design into the existing site, the school was able to conserve existing vegetation, control erosion and increase natural lighting. Whitman-Hanson also installed a 51 kilowatt (kW) solar electric array on the roof that supplies electricity to the school and also serves as an energy-related learning opportunity for students. Without the financial incentives noted above, the school had less than a nine-year payback to build green. With the incentives, the payback for the school's green features was under a year.

These three schools are just a few of the Mass. green schools being highlighted at Greenbuild this year. The success of these schools depends largely on integrating the entire design team early in the process, conducting a life-cycle cost analysis and taking a whole-building approach. The commonwealth's high-performance green schools are illustrating to the world how green buildings can decrease operating costs while enhancing the learning and teaching environment and reducing impact on the natural environment. Constructing green schools will also help to foster environmentally-minded students who will grow up committed to sustainability and protecting our environment.

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