



Archie R. Cole Middle School

East Greenwich, Rhode Island



Photo Credit: Symmes Maini & McKee Associates (SMMA)

General Information

Location: 100 Cedar Ave. East Greenwich, RI
Scope: 110,000 square feet of new construction
Cost: \$32 million
Completion: August 2011
Enrollment: 573 students grades 6th to 8th
Architect & Engineer: SMMA
Funding/Grant: National Grid Design 2000plus rebates for lighting, VFDs and ECM motors
Award: AIA RI Chapter Honor Award 2012
Certification: NE-CHPS

The three-story, 110,000 square-foot facility is designed according to the **Northeast Collaborative for High Performance Schools (NE-CHPS) Criteria**, which is based on California's version of the **CHPS** guide to building energy efficient, environmentally friendly, and healthy school facilities. The integrated design of the school takes into account the surrounding residential neighborhood and high-performance elements that make the building 30 percent more energy efficient than code (70 kBtu/sf).



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Project Overview

The construction of **Archie R. Cole Middle School** commenced in 2009 after receiving the approval from the town residents. In the preceding year, East Greenwich voters had approved to take out a 30-year, \$52 million construction bond to build the new middle school and fix up the district's school facilities. The new middle school which was built adjacent to the old junior high school, a facility built in the 1950s and opened in 2011 to accommodate over 570 students in 6th, 7th and 8th grade, while the old building only had room for grades seven and eight.

Reduction in energy costs will yield over \$182,000 in savings annually.

The school's plan is on an east-west axis to optimize solar orientation while long, sloping roofs allow for rainwater harvesting. The project's design maximizes the use of natural daylight through special glazing, skylights and clerestory with daylight sensors, and sunshades on the building's southern façade used to control sunlight.

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Other high-performance features include the use of computerized maintenance and energy management system, demand-control ventilation to reduce need for air conditioning, and a 50 kW solar photovoltaic system to offset electricity use. The **building is used as a learning tool** through the use of signage and electronic output from the energy management system. Interactive tools inside and outside of the classroom allow sustainability elements to be integrated into the school's curriculum.

The school's configuration along an east-west axis helps to optimize solar orientation



Building design maximizes use of natural daylight



"School as a Teaching Tool"

Sustainable Design Elements

Site

- Design integrated with the residential community by locating the highest point of the building central to the site
- Project sited to preserve wetlands, protect greenfields, and avoid floodplains
- Light pollution reduction

Materials

- 14 percent of materials were recycled content
- 35 percent of materials are locally produced
- 88 percent of wood came from FSC sources

Water

- Efficient interior fixtures reduced total water use by 40 percent combined with rainwater harvesting for 67 percent annual water savings

Energy

- East-west orientation optimizes solar orientation
- High performance glazing systems and fenestration designed to optimized daylight harvesting; Occupancy sensors
- Operable windows in classrooms
- High performance lighting; 30 percent above code
- Super insulated, cool roof
- Control-demand ventilation minimizes air-conditioning need
- Computerized maintenance management and energy management system
- Dedicated exhaust and premium filtration
- 50 kW solar photovoltaic system

This case study was prepared by NEEP with information provided by Symmes Maini & McKee Associates (SMMA). To learn more about this project, please contact Ed Frenette (efrenette@smma.com) or Lorraine Finnegan (lfinnegan@smma.com)

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