

Arlington Public Schools – Massachusetts

The Arlington Public Schools (APS) in Arlington, Massachusetts consist of seven elementary schools, one middle school, and one high school; in all, the district serves over 5,000 students. Part of the APS mission includes "preparing students for responsible participation in an ever-changing world" and reducing our environmental impact, improving health, and providing environmental education are integral to this mission.

Pillar 1: Reduced Environmental Impact and Costs

Pillar 1, Element 1A: Improved energy conservation/energy-efficient building(s).

The town of Arlington was designated a Green Community by the Massachusetts Department of Energy Resources in 2010. Among other things, we earned this designation by committing to reducing municipal energy use by 20% within five years, a goal we met in 2014. The Massachusetts Department of Energy Resources published this case study about Arlington's reduction of municipal energy consumption: <https://www.mass.gov/files/documents/2017/10/19/green-communities-case-study-arlington.pdf>. The APS district works to reduce greenhouse gases through a variety of initiatives, including:

- A. Installation of solar panels on six of our nine school buildings, with accompanying display screens in each of the participating schools to educate the school community about how much clean energy each school is producing. Data about the solar panels from the six participating schools is also posted on our town website: <https://www.arlingtonma.gov/i-want-to-/green-arlington/solar-pv-program>
- B. Installation of new, efficient natural gas boilers in place of outdated oil boilers
- C. Installation of LED exterior lighting
- D. Use of variable speed exhaust hood and automated refrigeration controls in walk-in freezers
- E. Replacement of failed steam traps to avoid wasting steam in schools
- F. Installation of energy management systems (EMS) to provide centralized control, scheduling and monitoring of HVAC systems
- G. Recent school rebuilds (Thompson Elementary, Stratton Elementary) that were designed with light shelves, which reflect daylight into the rooms, daylight dimming sensors, occupancy sensors, and efficient plumbing fixtures. Both Thompson and Stratton are certified as Collaborative for High Performance Schools (CHPS) and Thompson is certified as a CHPS "Verified Leader". This designation requires a school "must be balanced in providing benefits to the environment, student health and student performance."
- H. The upcoming high school rebuild project is pursuing a net-zero energy design.

Pillar 1, Element 1B: Improved water quality, efficiency, and conservation

Drinking water in the Arlington public school district is tested routinely by the Department of Public Works and managed by the Board of Health. In 2016, local community public water systems and the Massachusetts Water Resources Authority (MWRA) conducted lead and copper sampling of the drinking water at the Arlington Public Schools (through a technical assistance grant awarded to the Arlington school department from the Massachusetts Department of Environmental Protection). Results indicated that all but the high school were "below action level"

(<http://www.mass.gov/eea/docs/dep/water/drinking/lcca-schools-list.pdf>) and the high school levels were addressed and brought into compliance.

For water conservation, the water fountains in some schools include bottle fillers to help minimize use of bottled water. Thompson and Stratton elementary schools have new, highly efficient [Flushometer-valve](#) toilets. Stratton also has sensor-enabled faucets. School custodial staff monitor school sinks and fountains regularly and ensure that any leaks are repaired quickly.

Arlington does not apply any fertilizer to school lawns, which keeps both surface runoff and groundwater cleaner.

Pillar 1, Element 1C: Reduced waste production and improved recycling and composting programs

Reducing waste production is a top priority in the APS district. In addition to the aforementioned lunchroom food waste collection, all schools recycle in the lunchrooms, classrooms, and hallways. Green Team students are actively involved in recycling collection and education at several of the elementary schools and at the high school. Four of our schools conducted classroom recycling audits and eight of the nine schools have conducted lunchroom waste audits. These waste audits assess the contents and weights of all categories of waste (recyclables, liquids, compostables, trash) and have educated the school community with their results through bulletin board displays, classroom presentations, and assemblies.

The school district launched a textile recycling campaign in the 2016-2017 school year, culminating in a competition with prizes for the school that collected the most textiles. Over 7,000 pounds of textiles were collected in just three weeks. As of January 2018, six of our nine schools have textile recycling bins on the school grounds through the Bay State Textiles School Box Program, already recycling over 5,000 pounds of textiles and raising funds for the schools.

Green Teams at several of our elementary schools have organized additional waste reduction initiatives, including:

- a pumpkin recycling event just after Halloween this past fall, successfully composting 3,000 lbs of pumpkins and thus rescuing them from going to the incinerator, and
- collecting unwanted school supplies in good condition at the end of the school year to then be re-distributed the following school year.

Currently six of our nine schools compost lunchroom food waste, with plans for district-wide participation over the next two years. This food waste (representing 122,000 lbs per school year) is now being processed and delivered to local farms rather than being transported thirty miles to an incinerator to be burned. The schools with food waste collection also replaced their foam trays with compostable ones.

Pillar 1, Element 1D: Use of alternative transportation to, during, and from school

All seven elementary schools in the APS district participate in Walk or Bike to School days multiple times during the school year, encouraging families to see the environmental and personal health benefits of

alternative ways to get to school. These days are well-publicized and have high rates of participation. The majority of middle and high school students in Arlington walk or take the local bus to school.

Pillar 2: Improved Health and Wellness

Pillar 2, Element 2A: An integrated school environmental health program

The modern HVAC systems installed in many of the APS schools provide better air filtration than older systems. All school HVAC filters are inspected and changed twice a year and rooftop units annually. The Arlington Public schools implement Integrated Pest Management, with an IPM Coordinator at each school and indoor and outdoor plans and overseeing committees (which include the superintendent, principal, facilities director, head custodian, food services director, board of health representative, and superintendent of buildings). There are fresh air dampers on all school unit ventilators, CO₂ alarms, and a contracted burner service that provides combustion services and monitors emissions. As aforementioned, rebuilds and renovations of Arlington Public schools are designed to improve air quality, energy conservation, and environmental health. Two of the elementary schools (Dallin and Thompson) have “No Idling” signs posted at their drop off/pick up areas.

Only Arlington High School uses chemicals in their science classes and they comply with the Resource Conservation and Recovery Act (RCRA) in the management of hazardous waste. They receive consultation from the Environmental Protection Agency (EPA) in their management of chemicals and comply with the EPA’s school-specific recommendations and guidelines. They have fume hoods in all their labs and they separate acids and flammables from other chemicals and categorize chemicals on shelves to minimize cross contamination and reactivity.

In 2012, the Arlington School Committee adopted a Green Cleaning policy requiring that school cleaning products be evaluated and certified by Green Seal and the MA Environmentally Preferable Products Program (EPP). The policy states that “The Arlington Public Schools will use green cleaning products and practices to support the goal of maintaining a healthy, safe, and clean environment for students, faculty and staff” (<http://www.arlington.k12.ma.us/asc/policies/ecd.pdf>). In the 2017-2018 school year, the Brackett Elementary School Green Team launched a classroom green cleaning campaign and succeeded in replacing disinfectant wipes used by students in all the classrooms with safer natural green cleaners, made by the Green Team students.

Pillar 2, Element 2B: High standards of nutrition, fitness, and outdoor time

There are many programs in the APS district that address the nutrition, fitness, mindfulness, and overall health of students and staff, including:

- A. The Arlington Eats program, which provides daily healthy snacks (e.g., fruit, cheese sticks, yogurt) to students, especially those at the Title I schools in the district. This program, through a collaboration with the Arlington Food Pantry, also provides meals to families during school vacations, the summer, and a community dinner once a month
- B. Fit Girls for elementary school students, led by teachers and school social workers and based on the Girls on the Run national model

- C. Multiple before and after school fitness programs (e.g., the before school exercise program offered by the physical education teacher at Brackett Elementary School for fourteen years and after school yoga and parkour classes offered in classrooms and playgrounds at the schools through the Arlington Community Education's KidZone program)
- D. Heart Rate Monitors for high school 9th grade physical education students to help them learn more directly about heart rates, training zones, and cardiovascular fitness
- E. Mindfulness-based programs for students and staff (facilitated by school nurse, social worker, occupational therapist, and teachers) at Hardy and Thompson Elementary Schools and at the Ottoson Middle School
- F. A diabetic care coordinator who oversees the health related issues for the district's growing population of students with type 1 diabetes and runs a related parent group
- G. The Open Circle program at all the elementary schools that provides evidence-based social and emotional learning (<https://www.open-circle.org>).

Pillar 3 – Environmental and Sustainability Education

Pillar 3, Element 3A: Interdisciplinary learning about the key relationships between dynamic environmental, energy, and human systems

In the elementary and middle schools in the APS district, many of the science classes address environmental topics, aligning with the Massachusetts Science and Technology/Engineering Curriculum Framework. Examples include a unit in Earth and Space Sciences in kindergarten that explores how plants and animals (including humans) can change the environment, a 6th grade Technology/Engineering unit that gives students a design challenge and asks them to consider potential impacts on people and the natural environment.

Arlington High School offers a standard and AP Environmental Science class, as well as Biology, Astronomy, and Oceanography. In a class called Current Issues, climate change, the Paris Climate Agreement, and environmental protection topics are included. In the Introduction to Public Policy class, which is a college level class that is part of Syracuse University's Project Advance program, many students choose environmental topics for their final project. Past final project topics have included "The Redistribution of Food in the Cafeteria to Reduce Food Waste" and "A Policy to Reduce the Amount of Plastic Water Bottles Used at AHS." Arlington High School also offers Backpacking and Winter Survival courses as part of the physical education curriculum. These courses culminate in a 3-4 day overnight trip and include "leave no trace" principles (caring for your surroundings), and learning about the natural history of the area. Half of the class meeting time is spent outside (at Arlington's Menotomy Rocks Park) during the quarter prior to the trip.

This spring a high school senior approached the Arlington School Sustainability Coordinator about doing an internship. The high school intern (a current senior with an interest in environmental science) researches and writes a monthly eco-newsletter shared through the School Sustainability page on our town website: <https://www.arlingtonma.gov/departments/public-works-/recycling-trash-composting/school-programs>.

Pillar 3, Element 3B: Use of the environment and sustainability to develop STEM content, knowledge, and thinking skills

School gardens provide the ideal site for applied environmental education at many of the schools. Bishop Elementary School received grants to fund a garden educator and to develop a curriculum, which connects classroom science and social studies curriculum to garden activities (e.g., 3rd graders planting a Three Sisters garden—corn, squash, and beans—as part of their Wampanoag unit). The "Envirogarden" at the high school gives students the opportunity to experiment with green technologies such as solar voltaic, wind, and aquaculture as well as to explore organic gardening and pond studies. High school students also recently used their Maker Space to build raised garden beds for Menotomy Preschool students (the preschool is housed in the high school).

Pillar 3, Element 3C: Development and application of civic engagement knowledge and skills

As aforementioned, there are Green Teams at all the Arlington Public Schools that engage parents, teachers, and/or students in environmental learning and action. Most teams meet before or after school throughout the school year and participate in town-wide events like Town Day in September, Ecofest in March, Earth Day programs, and the Patriots' Day Parade in April. All teams are registered with the Massachusetts Department of Environmental Protection's Green Team program and the Arlington Public Schools were featured in the Mass DEP's Green Team newsletter in February 2018.

In the fall of 2016, the town of Arlington hired a School Sustainability Coordinator, funded in part by the Massachusetts Department of Environmental Protection's School Recycling Assistance Grant. The School Sustainability Coordinator created an online resource library of Green Team projects, guest speakers, and grant/fundraising opportunities, and facilitates bimonthly meetings for the Green Team parent/teacher/student leaders to share ideas and support.