U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

Highlights from the 2015 Honorees

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Introduction

Now in its fourth year, the U.S. Department of Education Green Ribbon Schools (ED-GRS) continues to honor schools and districts. We have added a third category to this year's cycle: the Postsecondary Sustainability Award. So this year, for the first time, you can learn the full spectrum of sustainability work in schools, from early learning to postsecondary.

Here at ED, we work with natural resource and health agencies to share effective resources for school sustainability and, of course, spotlight the promising practices of our honorees. In the same way that we work together across federal agencies, state education authorities collaborate in exceptional ways with their state health, environment, and energy agencies. The private sector has gotten involved at federal, state, local, and school levels. In this way, ED's recognition award serves as a tool to get government working better to the benefit of students across the nation.

The ED-GRS Pillars of reduced environmental impact and costs, improved health and wellness, and effective environmental education remain the same, whether selectees are schools, districts, colleges, or universities. Increasingly, honorees' efforts are the result of more concerted policies at the intersection of environment, health, and learning at state, district, and university levels. We are pleased to see that the award has prompted instructors, parents, students, and administrators nationwide to acknowledge the critical need for students to learn in a manner – and a place -- that will sustain both them and the planet. These green schools, districts, and postsecondary institutions have taught us that it's not just *what* students are learning; the *where* matters too.

We've been thrilled with the collaborations at the federal, state, and local levels as a result of ED's recognition award. The collaborations that inspire us most, though, are those of our honorees themselves. Apart from progress in all three Pillars – not just one – you'll notice another common thread among our honorees: They have been tremendously resourceful in partnering with businesses, parks, farms, museums, nature centers, sporting facilities, religious institutions, townships, and countless other entities.

Our honorees are not necessarily the wealthiest institutions. In fact, over the last four years, nearly half of our honorees have educated underserved student populations. When it comes to green schools, high-poverty schools come out on top. That green school practices continue to be used as a tool to improve the built environments, health, and engagement of students of all ages that might seem to have the slimmest chances for success, and that they are thriving as a result, is no longer a surprise to us.

This year's selectees were confirmed from a pool of candidates voluntarily nominated and exhaustively reviewed by 30 state education authority implementation teams. While selection processes vary from state to state, selection committees generally are comprised of members of several state agencies as well as outside experts. In the second step of selection, states' nominees to ED were reviewed by a team of several dozen federal reviewers. This year, we have selected 58 schools, 14 districts, and nine postsecondary institutions that demonstrate promising practices to cut costs, improve health, and ensure that students learn through the most hands-on, engaging means possible.

The U.S. Department of Education Green Ribbon Schools, District Sustainability Awardees, and Postsecondary Sustainability Awardees prove that any school, district, or postsecondary institution can take steps to improve the sustainability, health, and safety of school facilities; ensure nutrition and fitness practices for a lifetime of wellness and productivity; and engage students in authentic, real-world learning.

Schools use sustainability in context to teach important civic values and skills that encourage students to grow into responsible, compassionate, and contributing citizens. Furthermore, working with dynamic environmental, social, and economic systems from an early age nurtures precisely the type of thinking, collaboration, and problem-solving skills that the careers of the future require, whether these students graduate from green career and technical programs, green college preparatory schools, community colleges, or liberal arts colleges.

It is with tremendous pleasure that we present the 2015 U.S. Department of Education Green Ribbon Schools, District Sustainability Awardees, and Postsecondary Sustainability Awardees. These honorees are ensuring that their students learn to live, work, and play with sustainability and health in mind, not as an afterthought, but as an integral part of everything they undertake, from cradle to career.

The 2015 Green Ribbons are here. Prepare to be amazed! When you recover, go to our www.ed.gov/green-strides page and get started using some of the same tools these awardees employ.

Andrea Suarez Falken
Director, U.S. Department of Education Green Ribbon Schools

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2015 U.S. Department of Education Green Ribbon Schools

Alabama

Bluff Park Elementary School, Hoover, Ala.

Helping a new generation of learners understand their place on the planet

At Bluff Park Elementary School, students feel a sense of accomplishment in getting their hands dirty, looking for live creatures, gathering data, writing, formulating logical connections, and following through with real-world projects that affect both the school and the community at large. Bluff Park incorporates sustainability in each grade level through a variety of student-oriented projects. Studying plant growth, looking up weather statistics, and mapping out plots become very real when a student is engaged in developing a garden.

Bluff Park's curriculum is rich in literature that supports environmental and conservation themes. Teachers make use of this information in all subject areas to aid students in making cross-curricular connections. Alabama Wildlife Resources and the Junior Master Gardener Literature in the Garden series provide concepts that can be adjusted to specific understandings and grade levels. This information provides a natural transition to real-world problem-solving, purposeful writing, and the design of projects based upon student questions.

Health is a critical component of learning at Bluff Park, with the help of a variety of partners. A Hoover High School students group offers prevention messages at the elementary school during Red Ribbon Week. Students receive hearing exams from the Bell Center, and vision exams form a team of community volunteers. The United Way provides walking guides for monthly walk or bike to school days. Alabama Power: Safe-T-Opolis provides an exhibition for fourth-graders on safety with electricity. Students in kindergarten through second grade receive an annual visit from Hoover Fire Department's Firehouse. Fifth graders receive a scoliosis screening from Children's Hospital, and kindergarteners and first-graders receive extensive talks on dental care. Custodial services clean daily to curb dust, mold, and mildew. The school nurse pre-treats students who have exercise-induced asthma.

Knowing that students learn more effectively using hands-on methods, Bluff Park transformed a weedy lot into an outdoor classroom in 2009. Outdoor learning experiences now start at Bluff Park with bug catchers, nature walks, tree identification, vegetable gardens, Backyard Bird Count, nestbox data, and weather monitoring, but extend beyond the school grounds as students learn about the broader world through field trips. Kindergarten students travel to Baker's Farm, first

graders to Birmingham-Southern's Environmental Center, second grade students learn about composting and erosion at Aldridge Gardens, and third-graders see the wonders of caves at DeSoto Caverns and learn about the rocks that make up Alabama at Vulcan Materials rock quarry. Fifth-grade students travel to Dauphin Island to learn about watersheds, sea life, and inhabitants of various ocean depths.

A variety of evergreen trees and shrubs around the buildings reduce heating and cooling, and plants and trees of various heights and coverage encourage diversity of species inhabiting school green areas. Irrigation systems are not used, since all plants survive on rain water. Well-kept tree trails, native plants, an edible garden, a rain garden, composting bins, raised beds, and a weather station, along with areas for organized and free play provide interactive hands-on opportunities for students. You will find students in the outdoor classroom studying bugs, micro worlds, releasing butterflies, collecting rock samples, and identifying trees and plants. The school installed a new playground system in 2013 with a surface manufactured from recycled tires.

Students worked in coordination with Alabama Power and Hoover heating, ventilation, and air conditioning (HVAC) specialists to follow up on questions students posed after completing a National Wildlife Federation (NWF) Cool Schools Challenge energy audit. Students from all grade levels met to disseminate information about the energy audit and plan conservation efforts.

In 2008, Bluff Park was the first school in Alabama to receive the U.S. Department of Agriculture (USDA)'s HeathierUS School Challenge Award. All students receive 30 minutes of daily supervised physical education. Outdoor activities begin as early as seven a.m. with Run Club, followed by a great breakfast in the cafeteria. During the school day, students enjoy a track and lower field area for structured physical education as well as a state-of-the-art playground for free play. All grades use the outdoor classroom for planting vegetables and collecting data on birds, trees, plants, and insects of all types for individual research or online Citizen Science projects such as eBird, Project Noah, or iNaturalist. An historical cabin hosts students throughout the year for a unique opportunity to live as locals did 100 years ago.

Mercedes Marathon and Jump Rope for Heart allow students to set personal fitness goals while supporting worthy causes. To highlight the school's unique history and to incorporate fitness and environmental awareness, Bluff Park has hosted an Outdoor Classroom Social since 2013. Students demonstrate family fitness night activities, offer tours of the outdoor classroom, and local individuals and businesses educate families on beekeeping, raising chickens, gardening, hydroponics, cheese from sheep, and other environmental projects.

Lincoln Elementary School, Lincoln, Ala.

Dreams of an outdoor classroom come true

Lincoln Elementary (LES) is a rural school in the northeast corner of Talladega County. This rapidly growing school serves 843 students in kindergarten through fifth grades, with 65 percent of students receiving free or reduced-price lunch. LES is a student-centered school that can serve as a model for any school with goals of developing leadership and actively engaging all students.

Built in 1999, the school received ENERGY STAR Certification in 2009. The new media center, constructed in 2012, is equipped with lighting and HVAC occupancy sensors for security and long term energy savings. Also, the school system received a $15,000 grant to equip all schools with occupancy-sensitive thermostats, which will help to continue an ongoing decrease in energy consumption. Staff and students have recently launched a recycling initiative for aluminum, plastic, ink cartridges, and tallow, and use only sustainable certified paper.

LES is fortunate to have Honda Manufacturing of Alabama as a partner. Fifth grade students tour the Honda plant in Lincoln annually to learn not only about assembly line production of automobiles, but also about the environmental stewardship that is a part of the Honda vision.

In 2013, LES earned the Gold Award of Distinction in the HealthierUS Schools Challenge. Students spend at least 150 minutes each week in supervised physical education, with at least 50 percent taking place outdoors. Students learn to use heart rate monitors to track their heart rate during activities. LES has partnered with Samford University and the University of Alabama-Birmingham to implement the Healthy Eating and Active 4 Lifestyle Program to promote health and fitness at school.

For the past four years, more than 100 students from first through fifth grades stay after school on Wednesday afternoons to be a part of the LES running club, which is funded in part by the Road Runners of America. The club's goal is for students to log 25 miles during club sessions at school, and then to participate in the 1.2-mile Kids Run at the Mercedes Marathon in Birmingham. The school also has the community running through the LES Bear Cub 5K, a communitywide event that started in 2013. In two years, community businesses have donated more than $15,000 in sponsorships. In 2013, more than 200 registered, and in 2014, more than 400 people participated in the five-kilometer race and the one-mile fun run.

Hearing, vision, and scoliosis screenings are administered each year to various grade levels. The school nurse works with students and parents to provide education on diabetes, asthma, and lice. LES is a Leader in Me Lighthouse School, a program that promotes the Seven Habits of Happy Kids. Guidance counselors provide monthly guidance classes and individual sessions related to bullying, peer relations, and self-esteem.

In 2014, the dream of having an outdoor classroom came to fruition as beautiful and functional gardens became reality. More than 75 percent of the school's grounds are now ecologically and educationally focused. Students travel stone pathways to work in raised beds where they grow vegetables, fruits, and flowers by themes such as the sensory garden, the George Washington Carver garden, the spring garden, the summer garden, and the butterfly garden. The outdoor classroom facilitates acquisition of science knowledge, horticulture, and ecology while also promoting learning experiences in reading, writing, data collection, health, and history. LES has received grants totaling over $28,000 from Lowe's Charitable and Educational Foundation, Coosa Valley Resource Conservation and Development, Legacy Partners in Environmental Education Grant Program and the Lincoln Elementary parent-teacher association (PTA) to provide this outdoor active learning environment. Other businesses including Lincoln Hardware, Colonial Chevrolet, and Willow Creek Construction partnered with the school to provide resources for the garden. LES is in the process of earning the Alabama Outdoor Classroom Certification, which will be complete in the spring of 2015.

Environmental concepts are integrated into the school's literacy program through the Making Meaning program, a reading curriculum for students in kindergarten through eighth grade that provides students the opportunity to learn about environmental issues in both nonfiction and fiction read-alouds. First-grade students learn about how plants grow and change over time in stories and poems. LES has a designated area in the library for environmental resources including books and videos.

Kindergarten students investigate different kinds of trees, make observations about seasonal changes, and help plant and care for a tree. First-grade students care for plants to learn what they need to grow and develop. They observe and describe changes that occur as plants grow, and organize and communicate observations through drawing and writing. Third-grade students discover that one seed produces one plant, and that one plant can produce many seeds. Fourth-grade students explore the relationship between an animal and its habitat, and ways animal behaviorist study animals. Students establish and maintain habitats for frogs, crabs, and millipedes. They collect data, identify behavior patterns, and compare and contrast the animals.

Lincoln High School, Lincoln, Ala.

Setting an example through recycling, agriculture, and problem solving

Over the last two years, Lincoln High School in Talladega County has made advancements in enhancing its environmental education program and sustainable green practices.

First came the renewal of an environmentally-focused agriscience program and curriculum. Barren grounds surrounding the school now host thriving natural landscapes that are being further developed and expanded through classroom projects and studies in not only the agriscience classes, but in all science classes. The agriscience and science curriculum leaders have acquired grants to expand the outdoor classrooms, and environmental study areas and student and community interest in outdoor spaces is exceptional. Several area farmers have become advocates of the new interest in the agriscience classes, and have helped with plowing gardens, developing the plasticulture garden, and fence building. The school campus now includes an outdoor classroom pavilion, grassy and heat-tolerant flora, bird habitats, vegetable plasticulture gardens that hold moisture and prevent the need for herbicides, and over 20 acres of open lawn for outdoor sports and activities.

Then came the awareness that Honda Manufacturing of Alabama, a company with a large presence in the area, demands a highly environmentally literate workplace that practices 100 percent recycling in manufacturing. However, recycling historically has not been available for small businesses, schools, or area residents. Lincoln High School took ownership of this need, and fully integrated recycling and other environmental measures into student organizations, daily habits, and facets of the curriculum.

Students and faculty take pride in their environmental accomplishments. Being an ENERGY STAR school is meaningful to students and faculty. Healthier Choice School initiatives have created new physical fitness approaches. Once inside the building, the school's sustainability work is evident, with recycling and energy conservation now a norm. Most importantly, environmental efforts are a supported healthy learning daily practice, not an occasional project. The rural school setting promotes healthy fresh air, clean water, and abundant family gardens. Lincoln is a leader in the USDA's HealthierUS School Challenge, achieving Gold status in 2010.

Students are keenly aware of the global needs of others. Students at Lincoln are preparing for the future with a curriculum heavy in real-life science, technology, and

math applications through project-based learning. Students engage in problem-solving activities related to sustainable houses, bridges, and new businesses, greenhouse science, and the value of healthy lifestyles. Students have a vested interest in numerous environmental activities, and have a greater sense of self-worth through ownership of the future of the planet, particularly as it relates to their health.

Students in advanced biology classes participate with college instructors from Jacksonville State University in collecting water quality data in area fresh water streams. The math and social science departments have embedded components of environmental education into the curriculum. For example, recycling is highly competitive between classes, and numerous math problems are centered on the volume, mass, and displacement theories of recycled plastic bottles. Government classes research legislation and requirements of the U.S. Environmental Protection Agency (EPA). English classes have led, through project-based learning, the communications of school climate awareness. As the school developed plans for adding a commercial greenhouse, students were involved in site selection, cost, elements of the greenhouse, and the business of greenhouse operations.

Through Lincoln's project-based learning curriculum, students have designed and created numerous informative digital announcements that are displayed throughout the school on large monitors reminding peers and staff of the environmental impact of aggressive recycling efforts and energy conservation measures. These digital production accomplishments may or may not lead to a career in movie production, but the ownership of the responsibility of going green is evident and enjoyed by the students and staff daily.

In past years, authentic engagement for learning through environmental studies and energy conservation was a principal's challenge. Now, the entire school community is cognizant of conserving water and paper products and limiting excessive lighting. Thermostat settings in moderation are the norm. Lincoln's efforts expand every day as going green has become not only desirable, but attainable. Lincoln is eating healthier, being physically active, and bringing environmental learning to a phenomenal high. The future of green practices is solidly embedded at Lincoln High School.

Auburn University, Auburn, Ala.

Sweet home sustainability

Auburn University is a public four-year university in Alabama that enrolls 20,626 undergraduate and 5,283 graduate students. The university demonstrates its

commitment to a sustainable world through the pursuit of strategies that improve environmental conditions, enhance individual wellbeing, and develop well-educated, thoughtful, and engaged graduates. Adopted in 2011, the university's sustainability policy affirms the university's commitment to sustainability as a core value and guiding principle for operations, instruction, research, and outreach. Auburn has established an Office of Sustainability and Academic Sustainability Programs, which help encourage, support, and advance sustainability through all functional areas of the university.

Auburn developed and adopted a Climate Action Plan in 2010, and identified a range of strategies to help curb emissions, as well as to create a more sustainable campus overall. One key area of focus has been the design, construction, and maintenance of campus facilities. Since 2010, the university has designed and built over 36 percent of its new square footage to Leadership in Energy and Environmental Design (LEED) certified standards, with the majority of this new building space achieving LEED Gold certification, for a total of 13 LEED certified or registered constructions. The university also has explored the application of alternative energy through the installation of a geothermal system at the soccer and track facility, as well as by erecting two solar array projects. The university has implemented a variety of strategies to reduce water consumption, which have resulted in a 40 percent decrease in campus water usage. Auburn has been designated a Tree Campus USA every year since 2009, and features cisterns, bioswales, rain gardens, dry stream beds, and pervious pavement. The community celebrates No Impact Week annually.

Led by the waste reduction and recycling department, the university has expanded its capacity for the campuswide collection and recycling of a variety of materials. One of the primary methods through which the university supports alternative transportation is the Tiger Transit bus program. The university has made significant investments to encourage and improve the walking and biking infrastructure on campus, and has integrated a nonmotorized campus core into its Campus Master Plan.

Auburn has moved away from intensive chemical management of its grounds to a more holistic approach to landscape management. To date, over 39 percent of campus-maintained acreage is actively managed using integrated pest management (IPM) practices. Many standard practices are implemented to help maintain the quality of indoor air. The university's purchasing and use preference for certified green cleaning products helps maintain indoor air quality (IAQ), reducing chemical exposure for both cleaning staff and building occupants.

The university provides a range of facilities for its students and employees to visit in order to attend to their health needs, including the new 240,000 square-foot

Recreation and Wellness Center; the Auburn University Medical Clinic; the Speech and Hearing Clinic, staffed by state-licensed and nationally-certified audiologists and speech-language pathologists; and the Health Behavior Assessment Center, which provides substance abuse assessments, personalized assistance, and referrals. TigerFit, a curriculum-based program designed to provide kinesiology students with hands-on training in clinical health and fitness assessment, offers fitness services to Auburn employees and students, as well as the general public. The Health Promotion and Wellness Services unit provides evidence-based and theory-driven health promotion and prevention services to the student body.

Effective environmental and sustainability education is woven through numerous programs. The Academic Sustainability Programs focus on training students and faculty in the concepts and application of sustainability; expanding the incorporation of sustainability into the curriculum; fostering interdisciplinary sustainability research; and overseeing, advising, and administering the minor in sustainability studies. The university offers many undergraduate major and graduate degree programs related to environmental, social justice, civic engagement, and other sustainability-related topics. Examples include the environmental science and biosystems engineering program for undergraduates, and graduate programs in community planning and landscape architecture. In total, over 300 courses in 42 departments on campus offer sustainability-related content, including education on issues in social, economic, and environmental systems. Sustainability-themed academic offerings also are provided for new students via the Learning Communities initiative. Beyond individual research projects, students have the opportunity to engage with a variety of sustainability topics with study abroad of Regional Sustainable Technologies in northern Spain, Climate Change and Environmental Management in Panama, or Watershed Services in Costa Rica.

California

Los Cerritos Elementary School, Long Beach, Calif.

After-school programs blossom from school garden roots

Los Cerritos Elementary School was established in 1924 in Long Beach, a city of approximately 465,000 residents, and one of the most diverse large cities in the United States. Located in an urban environment, the Long Beach Unified School District has been making strides toward sustainability, saving $3,600,000 annually since 2002, and Los Cerritos Elementary has been doing its part in assisting with this effort. Established before the turn of the 20th century, many Los Cerritos buildings date from the early part of the 1900s. Since that time, Los Cerritos teachers, families, and students, 43 percent of whom qualify for free- and reduced-

price lunch, have continued to build strong relationships within the community and work together for its betterment.

With a long history of community involvement and tradition, Los Cerritos Elementary is a fundamental part of the neighborhood, particularly with the Urban Farmyard, its well-known school garden. Established in 2000, the Urban Farmyard is a place of environmental stewardship and learning for every Los Cerritos student. The principles of the garden include encouraging healthy food choices by exposure to fruits and vegetables, which students grow themselves; encouraging character building and community involvement; and instilling in students a love of the Earth and a concern for the environment -- all while connecting lessons to state standards. The garden provides students with opportunities for authentic hands-on learning experiences, and is an ideal curriculum integrator.

The Urban Farmyard has received numerous awards and grants totaling over $40,000 and has served as a model locally and nationally. The garden provides opportunities to introduce students to a wide variety of fresh foods by making use of 22 raised beds with drip irrigation to produce over 35 types of fruits, vegetables, and herbs. The beds attract beneficial insects and butterflies by creating borders made up of perennial flowers and herbs which also serve as a habitat for the wildlife. The garden allows students and community members to make healthy food choices, and engages them in beneficial physical activity. It is a designated Wildlife Habitat and a Monarch Butterfly Waystation.

Los Cerritos Elementary also boasts a seasonal flower garden with a Peace Pole and a solar-powered water feature. Along with a composting area, a chicken coop, a small fruit orchard, and a red tool barn, the school brings lessons alive by incorporating outdoor classroom seating and tables on its grounds. The outdoor spaces are also used for buddy reading, observation, lessons, games, movie nights, sleepovers, graduation, and potluck dinners. Classes take walking field trips, such as to the Dominguez Gap Wetlands next door, and use California Education and the Environment Initiative environmental education standards. Los Cerritos worked with past ED-GRS honorees to learn from them.

Gardening acts as a gateway into career exploration of fields such as agriculture, forestry, ecology, soil science, horticulture, botany, cooking, pharmacology, and carpentry. It is a stage for discovery-based learning in all subjects, questioning, experimenting, and problem solving, all of which are important parts of the Common Core State Standards. Gardening engages children in relationships with learning, nature and the environment, community resources, and with their peers and adults. Experiences in this beautiful outdoor space also foster a sense of responsibility and respect for all living things, and provide a spirit of cooperation among those involved.

This spirit transfers to the classroom and creates a strong sense of community and appreciation for others.

From involvement in programs such as Cool the Earth, a sustainability afterschool club; Roots & Shoots; a comprehensive recycling program; the school's active Green Team; and a PTA that continually inspires families, the Los Cerritos community walks the walk of environmental stewardship and sustainability. Reusable plates, silverware, and cups all are a part of the school's garden cooking lessons, PTA teacher luncheons and potlucks, and student lunches, especially on Trashless Tuesdays. The parent and student Green Team takes the lead in recycling lunchtime food waste and participates in Terracycle Brigades. The team organizes bottle and can drives, along with book and uniform swaps for students. For families, the team offers valet parking to promote safe drop-offs and reduce vehicle idling, the walking school bus, Walk-to-School Wednesdays and Bike-Friendly Fridays, and a page on the Los Cerritos website devoted to healthy lifestyle choices and tips.

The campus features permeable surfaces and achieved ENERGY STAR certification in 2011 with Portfolio Manager score of 96. It has changed tubular-12 (T-12) lights to T-8 lights, and auditorium incandescent to LED lights. It participates in EPA Indoor Air Quality Tools for Schools (IAQTfS), and practices IPM. The school is a drop-off site for a local community supported agriculture program.

Carmel Middle School, Carmel, Calif.

An on-site environmental education center benefits students districtwide

Carmel Middle School (CMS) is the sole middle school for Carmel Unified School District, a district that stretches from Big Sur on the Pacific Coast to Cachagua in the Carmel Valley. Drawing a diverse group of students from over 600 square miles, the district is roughly the size of Rhode Island. CMS focuses on academic achievement, balanced with an appreciation for the uniqueness of each child, which fosters a love of learning, environmental stewardship, a healthy lifestyle, and civic engagement. CMS is dedicated to providing a safe and positive learning environment where students can thrive and make meaningful contributions to their world.

The CMS campus includes the award-winning 10-acre Hilton Bialek Habitat (The Habitat), an environmental education nature center that, in conjunction with MEarth (the Habitat's nonprofit organization), offers science, environmental education, and sustainability programming. This programming, including ecoliteracy, nature studies, social studies, English-language arts, and world language, seamlessly integrates

sustainability education into curriculum lessons and activities. Annually, MEarth serves over 1,000 Carmel Unified students and another 975 underserved students from the greater Monterey Peninsula at the Habitat. The Habitat's Silver LEED-certified green building was completed in 2012, and offers a living laboratory for environmental practices, earth-friendly materials and construction, and an introduction to green technology and jobs. The building is the first LEED-certified public school building in Monterey County.

The school's hallmark environmental program, called Ecoliteracy, is a six-week required course for all sixth-graders. Ecoliteracy focuses on learning about threats to biodiversity such as habitat destruction, invasive species, human population, pollution, and overharvesting. The lessons also include the study, harvesting, and cooking of fresh, local, organic, seasonal, and sustainable foods, using the Habitat's one-acre organic garden and orchard and the LEED-certified green classroom. CMS also has an extensive farm-to-table program, a produce exchange, and a visiting-chef program.

In addition to the sustainability programming and ecological restoration activities at the Habitat, CMS offers many outdoor education opportunities. Monterey Bay Outdoor Education, an intense three-day rotational program through which seventh graders experience local ecological sites including the Carmel River, Elkhorn Slough, and Point Lobos to learn from local experts about habitat protection, environmental impacts, and environmental advocacy is very popular. Also available are field trips and hikes to local and distant sites including the Monterey Bay Aquarium, Anza-Borrego Desert State Park, and Yosemite; and Winter Outdoor Education for seventh graders at Sequoia National Park in the southern Sierra Mountains with instruction in ecology, zoology, geology, astronomy, winter survival, and winter sports.

CMS has an active environmental club, which has led schoolwide education efforts regarding recycling and reduction of single-use plastics, and has worked with a local business, EcoCarmel, to provide reusable lunch containers for every student. Since 2009, the environmental club has assisted CMS in earning the National Oceanic and Atmospheric Administration (NOAA)'s Ocean Guardian School status. These students make presentations at The Gathering (a weekly assembly of all CMS students), participate in Zero Waste Week Lunch activities each March, and, through their efforts, reduced the school's use of single-use plastic baggies by more than 10 percent in one school year.

CMS was part of the district's facility modernization in 2002-03, during which all classrooms were retrofitted with energy-efficient lighting, occupancy sensors, acoustical treatments and insulation, new HVAC systems, lead-free plumbing fixtures, and low-flow toilets. Additional retrofits continued in 2011 with induction

lighting and occupancy sensors installed in the gymnasium. Demonstration solar panels on the green classroom produce approximately five percent of the energy used by the school, and CMS covers 19 percent of its electric needs through renewable energy purchased from Pacific Gas and Electric Company. A preventive maintenance plan addresses the school's maintenance needs, conducting structure inspection for leaks, spills, and water damage. Retention ponds constructed in the late 1990s hold stormwater runoff. An energy management system, installed by Johnson Controls in 2003 and upgraded in 2013, provides continual monitoring of energy use and students can view usage real-time on a dashboard. CMS has cut student paper consumption in half in just one school year through teachers distributing and receiving documents in electronic format using assignment-management software program called My School. In 2015, there will be 1:1 computing for all students, with the goal of moving paper consumption toward zero.

Susan Miller Dorsey Senior High, Los Angeles, Calif.

Comprehensive sustainability education as a leadership development model

Dorsey High School is located in south Los Angeles, a densely urban, multi-cultural area of the city. Dorsey takes an integrative, multidisciplinary approach to environmental education by leveraging local resources and developing innovative strategies and partnerships to incorporate outdoor and experiential learning; science, technology, engineering, arts, mathematics (STEAM) subjects; and career technical training. The students, 80 percent of whom qualify for free- or reduced-price lunch, make use of community engagement, collaboration, and service to build a comprehensive education in sustainability, while serving as a leadership development model for a diverse community.

The Los Angeles Audubon Society's Baldwin Hills Greenhouse Internship and Restoration Leadership programs provide standards-based programming that incorporates sustainability into outdoor education, science, art, community engagement, leadership, and college and career preparation. The program provides students the opportunity to work with biologists and restoration ecologists, and the ability to serve as researchers at the nearby Baldwin Hills scenic overlook. Students create and deliver curriculum to younger students and serve as peer-to-peer mentors, leaders, and docents. They engage the community through service learning and conduct high-level environmental research and analysis, while restoring and protecting a precious urban oasis in their neighborhood.

Dorsey's innovative Restoration Leadership Program, funded by a U.S. Fish and Wildlife Services habitat restoration grant, allows mentorship opportunities at Leo

Politi Elementary and is a model for other schools. What began with Dorsey students helping to establish and plant Politi's celebrated native bird/pollinator garden has grown into a robust, continuing program whereby Dorsey students serve as role models as they help educate Politi's students on a broader basis. The habitat serves as an outdoor classroom for science, art, language arts, leadership, and community engagement, using sustainability as a framework. Since this mentorship relationship began, Politi's science scores have improved, and the young students have begun to develop a lifelong connection with the environment.

Dorsey's Eco-Club has grown from 15 original students to over 50 active members today. Together they have implemented several recycling and campus litter abatement programs, and produced the anti-littering film An Unnatural Disaster. In 2011, a group of seven students wrote and illustrated Kill Your Lawn, a comic book to raise community awareness about the conservation value of replacing lawns with native plant species. Eco-Club members successfully led the school in diverting 28,650 pounds of materials from landfill to win Generation Earth's "Battle of the Schools" recycling challenge.

Dorsey's school garden has a thriving native plant population, installed and supported by the University of California's Master Gardener Program, as well as sustainably harvested bed gardens, donated by Victorious Green. Students learn science in the native plant garden, culinary arts students harvest and use the organic fruit and vegetables, and vocational students work in the garden as part of their programs.

The School of Business and Entrepreneurship's culinary arts program hosts a WebTV cooking show called Cooking Live with Dorsey High. Their Turkey Chili Bean Delight recipe was lauded by USDA's 2014 Recipe for Healthy Kids Challenge. The students in culinary arts also run the Popular Healthy and Tasty (PHAT) Café. The school implements Fitnessgram, hosts marathon trainings, and offers Outward Bound trips. Dorsey's humanities program integrates filmmaking, artistic expression, social justice, and environmentalism. A product of this program is the book From the Couch to the Kitchen, a writing project that incorporated students' experiences with food in tradition and in the community.

Dorsey's wellness committee provides faculty and staff with monthly nutrition and wellness updates and resources. Staff can take part in classes like cycling and Zumba, and participate in The Biggest Loser, which awards a prize to the person who loses the largest percentage of body weight in a 90-day period. The school district has a staff wellness policy, and offers additional resources for exercise and healthy eating.

Dorsey teams participated in The Aspen Challenge in 2013 and 2014. In this national competition, students are issued a seven-week challenge to offer solutions to pressing environmental issues. In 2013, Dorsey's team was one of the six finalists with their interoperability community/student partnership strategy for raising environmental awareness. In 2014, Dorsey's team designed a solar-powered trash compactor to reduce environmental impact. Through the Challenge, students used their STEM skills to produce a solution to an environmental and societal challenge.

Two new LEED Silver buildings opened on campus in 2013. The new gym and ninth-grade academy building provide high performance, healthy, and comfortable learning environments. The new buildings replaced more than 50,000 square feet of asphalt with cool roofs and high albedo permeable paving. The buildings include a demonstration solar array and manage stormwater via a rain capture cistern.

Dorsey tracks resource use in EPA's ENERGY STAR Portfolio Manager and has earned a score of 75. In 1999, the Los Angeles Unified School District became one of the first districts in the nation to adopt an IPM program, and since has received two Innovator Awards from the California Department of Pesticide Regulation for its practices.

Dorsey High School is privileged to work with excellent partners and mentor organizations to bring sustainability education to its students. Dorsey students are scholars, environmental stewards, mentors to younger students, and natural leaders in their community.

Marin Country Day School, Corte Madera, Calif.

Turning learning into action through partnerships and year-round practice

Environmental sustainability has been a focus at Marin Country Day School (MCDS) for many years, though it formally became a part of the school's strategic plan in 2006. To advance sustainability goals, MCDS created the Environmental Oversight Committee (EOC). With broad representation, the EOC ensures buy-in and agency from all parts of the community.

MCDS has reduced greenhouse gas (GHG) emissions through careful attention to new construction equipped with green features such as daylighting, living and white roofing, and radiant heating and cooling. Photovoltaics on new and existing construction also serve to reduce GHG emissions. Water conservation and efficiency is improved through campus bioswales, landscaping, and a rainwater catchment system. The Learning Resource Center uses rainwater for toilet flushing

and radiant cooling and is recognized as the first net zero energy classroom building in North America. Waste reduction efforts include employing reusable dishware and flatware on campus; using three-bin waste stations (recycle, compost, trash); and implementing green purchasing guidelines, a waste protocol, and a green events checklist for campus events. Thirty-nine percent of construction on campus qualifies as LEED Gold or Platinum. Student-led efforts, such as participation in TerraCycle and the Green Schools Alliance Green Cup Energy Challenge, are a source of pride. In the area of transportation, MCDS promotes carpooling and arranges bus routes to ensure maximum possible bus ridership, resulting in a large majority of students arriving at school via bus or carpool.

MCDS also addresses the health and wellness of students, faculty, and staff in an intentional and systematic way. School facilities are carefully maintained to support a healthful, chemical-free learning environment. The school provides a robust physical education program, and much of the instruction takes place outdoors on playing fields, blacktop areas, and adjacent Ring Mountain. The MCDS food program almost exclusively serves environmentally preferable food. Moreover, as the school's culinary farm program grows, more and more produce comes directly from campus gardens, offering students the opportunity to be involved in the farm-to-table process. MCDS further supports the well-being of students by providing school counselors and a school nurse, and by partnering with outside agencies for education in topics including body image, human sexuality, and drug and alcohol awareness and prevention. MCDS likewise supports the wellbeing of faculty and staff through such measures as reduced-fee gym membership, an onsite yoga class, and an employee assistance program.

Finally, MCDS has worked diligently to provide environmental and sustainability education to students. The school has worked with the Cloud Institute for Sustainability and adopted the Education for Sustainability Standards. A rich program allows students at all grade levels to gain an understanding of systems, systems thinking, and the environment. Students have multiple opportunities to engage in service and civic engagement related to the environment in the kindergarten through eighth grade curriculum and through extracurricular activities. From kindergartners collecting compostable materials, to schoolwide nonnative plant abatement with partners from Marin County Parks on Earth Day, to a student-designed and led no-idling campaign targeted to parents in the carpool line, MCDS students turn their learning into action.

Working with community partners ranging from Teens Turning Green to the Golden Gate National Recreation Area, and by learning about the green features of the school buildings and how they were designed, MCDS students become aware of green career pathways they may wish to pursue. The school's extensive outdoor education programming includes trips to Joshua Tree, Yosemite, and Golden Gate

National Park. The school's STEAM initiative is well underway and is a major part of the current strategic plan. Summer camps offered to the community include farm camp and a STEAM focus, providing a complete wraparound experience for students.

El Monte Union High School District, California

Partnerships promote robust sustainability learning

In El Monte Union High School District (EMUHSD), collaborative relationships enable high-poverty students to explore career options related to the environment, turn passions and talents into successful green careers, broaden academic skills, and prepare students for high school graduation, advanced education, and full participation in a sustainable society. Strategic partnerships reduce environmental impact and costs, improve students' health, and further STEM and sustainability education goals.

EMUHSD engages many government agencies in its work. The Centers for Disease Control and Prevention works with the district to coordinate health and wellness policy and activities, while Caltrans introduces students to civil engineering careers related to wildlife conservation. The Los Angeles County Whittier Narrows Regional Park allows opportunities for biking and nature study, and the Upper San Gabriel Municipal Water District sponsors solar boat project lessons on water conservation. The U.S. Fish and Wildlife Service brings lessons in water quality testing to life, and the City of El Monte coordinates and promotes Safe Routes to School. The Office of Naval Research contributes the SeaPerch program, an underwater robotics program for sustainable deep-sea engineering. The district has been successful in implementing USDA's Rethink Your Drink and My Plate campaigns; employing the Los Angeles County Office of Education for a Harvest of the Month Club, nutrition guidance, and cooking workshops for parents and staff; and water-wise gardening with the help of the City of Rosemead and Gabrieleno Tongva Indians.

EMUHSD also partners with many corporations. Cenergistic, an energy-conservation company, has helped EMUHSD change energy behaviors, generate cost savings that are re-allocated to other education priorities, and reduce the district's carbon footprint. Southern California Edison organizes a student solar roofing project for school buildings, and Vons Credit Union, Edison International, and GRID Alternatives sponsor student/community projects to install solar panels on low-income family homes. Hewlett Packard enables practical math and science experiences for students with an alternative energy greenhouse grant, while Pureology's Green Champion prize allows a special-needs campus to build a

greener future. BP sponsors student wind-turbine designs, and Lowes collaborates on Go Green community murals and paint recycling. In partnership with State Farm, students relate lessons in world history, American history, and earth science to earthquake preparedness in low-income communities through the Quake Proof program.

Corporate partners enhance classroom discussions of diet and nutrition. The Dairy Council of California provides nutrition education in 10th grade health classes, and the district received a $135,000 grant from Wal-Mart and the American Association for School Administrators for alternative breakfast via campus vending machines. This has been so successful that a follow-on grant will continue the campaign, using Grab 'n Go carts to further increase breakfast participation. A student-led cafeteria redesign resulted in a Smarter Lunchroom -- a 50s theme that encourages healthy eating and after-lunch fitness via dance.

Community organizations have a strong presence in EMUHSD, where 90.2 percent of students are eligible for free or reduced-price meals. Community partners include the American Association of School Administrators, coordinating health insurance enrollment and breakfast; Kaiser Permanente, for a culinary arts project providing healthy snacks to seniors in assisted living; Asian Pacific Health Care Ventures and the Children's Defense Fund, for coordinating health insurance enrollment; the San Gabriel Valley Conservation Corps, for health fair recycling; the El Monte/South Chambers of Commerce, publishing information of interest to motorists, parents, pedestrians, and bicyclists about safe school zones and improved traffic safety; Amigos de los Rios, for community tree planting; the U.S. Green Building Council (USGBC) and Eco-Tech, on permaculture gardening; El Monte Sparkle, for city cleanup; and GRID, for community solar housing retrofits. With Eco-Schools USA, a program of NWF, EMUHSD is deliberately and steadily replacing water-intensive landscaping with xeriscaping, with a strong emphasis on pollinator plants that have many community and agricultural benefits.

School community members have worked to create a mile-long walking path. One school is beginning an after-school walking club for students, staff, and parents; another school has an after-school fitness club that includes walking, running, and outdoor exercise. Office staff is encouraged to walk outdoors during breaks. In the classroom, students engineer stationary "Human-Powered T-Vehicles" bikes to power TV sets, generate clean energy, raise science scores, and lose pounds. Auto Tech students who designed, built, and installed a 50,000 watt diesel co-generation unit, converted the co-generation to biodiesel, and created biodiesel fuel from recycled school cafeteria french-fry grease.

EMHUSD collaborates with many postsecondary institutions. Occidental College's farm to school program increases student exposure to fresh fruits and vegetables,

and California State Polytechnic University, Pomona provides STEM mentors for solar boat and wildlife crossing structures projects, as well as professional development opportunities for teachers. Similarly, Rio Hondo College provides STEM mentors for a green zoo construction project and other green careers.

The district was named an ENERGY STAR Leader in 2013, and was recognized for a 10 percent Improvement in Overall Energy Performance and Top Overall Energy Performance. To reduce energy consumption, two of the five comprehensive high schools have installed energy-reducing HVAC systems and new outdoor LED lighting throughout the campuses. One hundred percent of schools have cool roofs, and in addition to outdoor LED lighting retrofits, the district uses Venn Star thermostats; low-flow toilets, toilets with Sloan valves, and waterless urinals. They have also removed turf, and installed more drought-tolerant plants.

The district makes a concerted effort to involve parents, students, staff, and others in becoming more environmentally conscious. This includes a thoughtful six-part approach to sustainability thinking, continuous improvement that leads to changes in behavior, and real-world projects that advance sustainable living.

Colorado

Red Hawk Elementary School, Erie, Colo.

Linking activity and academics in a LEED Gold construction

Red Hawk Elementary School, a kindergarten through fifth-grade school, promotes rigorous instruction in math, science, and technology with an emphasis on integrating the arts into all of these areas. Developing a sense of environmental responsibility that includes personal development and physical wellbeing is at the heart of Red Hawk's learning philosophy. The four pillars on which the school's foundation stands, called the Well Way, include protecting the environment, health and nutrition education, movement, and character development.

The school facility is LEED Gold certified, designed to conserve energy dramatically and reduce environmental impact through the use of many green technologies. Features include a beneficial building orientation, ground-source heat pumps, tubular skylights, and the use of displacement ventilation diffusers throughout the building. This thoughtful design is an enormous part of the Red Hawk culture. Students are able to tell visitors about unique features that reduce the school's carbon footprint, including the fact that 100 percent of heating comes from geothermal energy. The building itself is a learning tool and an educational resource for the entire student body.

Red Hawk opened in 2011 with 436 students enrolled. Today that number is closer to 700 students, and yet Red Hawk has decreased its energy use per student by 21 percent in that time, and has reduced water usage per occupant by 56 percent. Part of that reduction can be attributed to initiatives such as ReNew our Schools, in which the students work together with the community to reduce environmental impact, as well as remaining vigilant that the building is being operated as it was intentionally designed. Red Hawk's STEM focus ties into daily learning about sustainability and the environment alongside the study of the thoughtful design of the school building. This learning takes students outdoors to engage them in science education, all the while developing critical thinking skills.

Red Hawk is one of the St. Vrain Valley School District's nine Green Star Schools, a unique Eco-Cycle program in Boulder County. Member schools participate in rigorous waste diversion activities, increased recycling efforts, and comprehensive composting initiatives. Red Hawk also actively participates in Eco-Cycle assemblies and field trips to enhance the classroom experience inside and out in order to learn critical conservation skills and lessons surrounding eco-system stability, waste management, and a healthy planet.

As a school that draws its population from the neighboring community, Red Hawk has a large population of walkers and bikers. The school has Bike and Walk to School Month each spring, during which bikers and walkers are greeted at the school with praise and a granola bar. The school's bike racks are consistently overflowing with bikes, and additional racks have been added in order to accommodate them. Walking paths throughout the surrounding neighborhoods and the community volunteer crossing guards at major intersections further encourage walkers and bikers. Eight local farms have partnered with the school district to bring local foods to schools, including Red Hawk, and the school has its own garden, which is planted and harvested by every grade level. The garden club, which is open to all students, meets once a week after school throughout the growing season. The school also partners with Whole Foods Market to offer evening cooking classes, which use the produce from the Red Hawk Garden. The school has hosted a number of well-attended, after-hours cooking demonstrations designed to educate and inspire healthy choices.

Red Hawk is particularly proud of its Red Hawk Movement program. In 2012, the program was awarded first place in the National ASAP Physical Activity Innovation Competition. This competition, an initiative of ChildObesity180, an organization that works in collaboration with Tufts University, was designed to identify and reward the most creative, effective, and scalable school-based programs that promote quality physical activity for children. The students at Red Hawk Elementary complete 40 minutes of rigorous physical activity every day, in addition to their physical education class and recesses. Overall, Red Hawk students are doing up to 500 minutes of

physical activity per week, the majority of which is outdoors. Red Hawk is currently collaborating with Kaiser Permanente, The Colorado Health Foundation, and Yale Prevention Center to spread the movement program throughout the district and into middle and high schools where a school-based activity program could be tremendously effective. In 2013, Red Hawk hosted the Excellence in Schools Summit, bringing together six nationally recognized school-based activity programs along with thought leaders and 250 educators to learn about the correlation between physical activity and academic success.

Colorado State University, Fort Collins, Colo.

Over 125 years of green leadership and innovation in higher education

Colorado State University (CSU) was a leader in sustainability long before the sustainability movement took hold, opening its first campus farm in 1888. Today, CSU holds the first Platinum rating by any college or university in the world from the Association for the Advancement of Sustainability in Higher Education (AASHE)'s STARS (Sustainability Tracking, Assessment, and Rating System). STARS helps postsecondary institutions benchmark their efforts and evaluates sustainability using social, financial, and environmental measures.

Making sustainability a priority in fields as diverse as academics, engagement, operations, and planning and administration has taken decades of vision and hard work. For instance, for years CSU has focused on reducing environmental impact and costs – including signing on to the American College and University Presidents Climate Commitment – with an ultimate goal of reducing campus carbon emissions to zero. The university assesses progress toward this goal through annual GHG emissions inventories, and updates its strategic Climate Action Plan every two years.

At the same time, an Energy Reserve Fund established by the university's Facilities Management team provides a revolving fund for campus energy- and water efficiency projects. The school typically is able to fund $750,000 to $1,000,000 in projects each year, and uses the utility savings to replenish the fund. Since 2000, efficiency projects have reduced water consumption on campus by 100 million gallons per year, in large part by reducing process water use in equipment, using efficient fixtures, and converting irrigation systems. The campus features solar installations, a biomass boiler, and 29 LEED certified or registered buildings. CSU has demonstration wind generation capabilities and it is evaluation wind for larger scale, as well as purchasing green power.

The CSU alternative transportation program encourages the use of alternative transportation among faculty, staff, and students, including by offering both land and funding to support the new Fort Collins MAX transit system. Commuter surveys show that over half the students on campus use alternative transportation. In an effort that combines the goals of good environmental stewardship and improved health, CSU has won recognition as a Silver Bicycle Friendly University by the League of American Cyclists for dedicated work to make bicycling on campus safe, convenient, and comfortable for all.

The CSU community takes wellness promotion to heart. For instance, the Commitment to Campus program provides benefits to faculty and staff that range from exercise programs and nutrition classes, to sports and cultural events, to dedicated lactation rooms for nursing mothers.

With nutrition labeling, vegetarian and vegan options, and a focus on local food, CSU's Housing and Dining Services works to make sustainable foods a part of diners' daily experiences. The dining centers are available to faculty, staff, and students so the entire campus community can take advantage of the healthy food choices. Dining halls have pulpers, participate in composting efforts, and recycle cooking oil. The President's Picnic, which involves the entire campus annually, achieved a 99 percent diversion rate. CSU is a Keep America Beautiful Recycle Mania participant and an Arbor Day Foundation Tree Campus USA.

In the area of environmental and sustainability education, CSU's School of Global Environmental Sustainability focuses on courses and research that provide a comprehensive understanding of the environment in an interdisciplinary framework. The School helps faculty embed sustainability into their curriculum, helps students graduate with enhanced sustainability literacy, and promotes cross-disciplinary research in sustainability. Students enrolled in the Global Social and Sustainable Enterprise discipline of the school's Business Administration master's degree program gain skills and knowledge to become green entrepreneurs – leaders who see business opportunities through the lens of a sustainable bottom line.

CSU is educating future green builders through the Institute for the Built Environment. Students trained by the Institute have performed the LEED documentation efforts on a significant number of the LEED projects on campus and for private developers. CSU also boasts constructed wetlands and a green roof designed by students.

The university also works to educate the next generation of green and STEM leaders, in collaboration with the area's schools. For example, the Little Shop of Physics offers hands-on educational programs that engage kindergarten through 12th-grade students in physics and scientific experimentation. Undergraduate

students take over 100 interactive exhibits to students to create a unique hands-on experience. Close to 30,000 students experience the Little Shop of Physics each year.

Civic learning and real-world exposure are the focus of the Student Leadership, Involvement and Community Engagement program at CSU, which allows students to participate in experiential and service learning opportunities that make a difference in the local community and around the world.

CSU continues to reach for new achievements and innovations, and to encourage and inspire other postsecondary peers to make sustainability central to the way they operate – and educate. The whole community strives to embody this assessment from the Sierra Club website, which placed the university 11th out of 175 peers on its list of "Cool Schools," noting: "The colleges at the top of our annual "Cool Schools" ranking are so dedicated to greening every level of their operation—from energy usage to recycling to food sourcing to curriculum—that sustainability has become woven into their very culture."

Connecticut

Parkway School, Greenwich, Conn.

Green in Greenwich through acts of service and environmental awareness

Parkway School is one of 11 public elementary schools located in the town of Greenwich, Connecticut. The school is home to 260 students in prekindergarten through fifth grade, and is the only school located in what is described as 'backcountry' Greenwich. Parkway is one of the smaller schools in the district, yet the catchment area represents 60 percent of the geography in Greenwich. Students ride on buses past fields and forests each day, which might include a glimpse of the wildlife that share the woods. Parkway students grow up surrounded by the beauty of nature, and they learn at an early age the need to protect what they observe in their own backyards.

Parkway School sits atop a hill and is surrounded by acres of fields and protected forest. The campus has a pollinator garden on the property, which recently was certified as a National Fish and Wildlife Schoolyard Habitat, and where students at every grade level spend time with science notebooks, recording observations and posing researchable questions. The school makes use of acreage as much as possible as outdoor classroom space, and collaborates closely with various conservation entities, including the town's conservation director, and well as neighbors in the backcountry, Audubon Connecticut, an operating unit of the National Audubon Society that is one of Connecticut's premier conservation and

environmental education organizations. Partnerships with both the town and Audubon provide opportunities for targeted professional development for teachers, resulting in strong programs in the environmental sciences for students. The school is a Project Learning Tree (PLT) and U.S. Forest Service Green School participant. Parkway parents also are important partners in developing students as environmental stewards, and they support the work done both in the school setting and at home.

The town of Greenwich demonstrates a deep commitment to the preservation of land and open space, and Parkway is able to access educational programs provided by the town and supported by the Parent Teacher Association. These programs include the study of Long Island Sound, where students collect and study water samples and participate in a cleanup of the beach. Students at all grade levels participate in field trips to local farms and nature centers, and school programs and assemblies encompass a green theme throughout the year. Fifth grade students chose to focus on this theme for their annual play this year, and created a production called, “Parkway’s Great Green Adventure.” The school was treated to home grown skits that highlighted recycling efforts and study of the environment, and the passion the students shared for going green was inspiration to all.

At the district level, Greenwich Public Schools demonstrates a strong commitment to energy conservation and the use of green cleaning supplies. Participation in EPA’s IAQTfS ensures a healthy environment for all. Recent renovations at Parkway School include the installation of water-conserving toilets and sensor lighting systems throughout the school. Hand dryers were installed in new bathrooms to reduce paper waste. The custodial staff has embraced all of the green initiatives, and they assist greatly both in recycling efforts and in the use of green cleaning products. They also maintain a well on the property, and are careful stewards of the grounds.

Students make use of every inch of Parkway School’s property for recreation. They have access to athletic fields during daily recess periods and enjoy two large playground structures on campus. Parkway students participate in physical education classes three times per week where they learn lifelong fitness skills, and have access to a robust schedule of before- and after-school classes that include something of interest at all fitness levels. Students and staff also participate in Fitness Fridays, which provide an extra 20 minutes of activity per week, such as a yoga session or kickball game.

Health and wellness initiatives at Parkway have resulted in changes at the district level, and have enabled the insertion of healthy menu items at all 11 schools as a result of cooking classes at Parkway. A partnership with a local organic farmer brought students together for a cooking class geared toward the creation of healthy

snacks, and the resulting kale and parsnip chips are now menu staples across the district. Parkway continues to increase options for healthy snacks and lunches.

Parkway students are encouraged to participate in service activities throughout the year that offer inspiration and real-world application. Students not only learn to apply their knowledge of protecting the environment to their daily lives, but are also encouraged to participate fully as members of a larger community by paying it forward. They participate in ongoing food and coat drives, Halloween candy give-back programs, and other activities that encourage acting globally.

Green LEAF (Leading, Educating, Achieving, and Fostering) Night was instituted in 2014, and quickly became Parkway's signature event. The evening of workshops brought over 160 participants to the school for lessons designed to promote sustainable living. Parkway partners with Greenwich High School, where students are trained to deliver workshops to the young students for Green LEAF Night on topics as varied as porosity of soil, to surface tension of water, to the movement of water through the water cycle. Green LEAF Night workshops have included a Tree Walk, where attendees go on a learning tour to understand the unique characteristics of the trees located on Parkway's grounds; Clean Up the Sound, which allows Greenwich High School students to lead experiments designed to bring attention to water pollution; Plant Part Salad, in which the Garden Education Center leads students to discover the many parts of a salad; and Animal Embassy, where local partners deliver workshops on endangered animals, and what can be done to help them.

In short, Parkway's participation as a Connecticut Green LEAF School ensures that Parkway students grow up learning that the little things they do really can make a big difference in the world. The school and its students are recognized as environmental leaders in the state, and hope to inspire others in developing the next generation of environmental stewards.

Academy of Engineering and Green Technology, Hartford, Conn.

Students succeed in the heart of Hartford with green technology studies

The Academy of Engineering and Green Technology (AoEGT) is a learning environment focused on student success, serving 438 students in grades nine through 12. More than 95 percent of the student body is eligible for free- and reduced-price lunch, 28 percent are English language learners, and more than 96 percent are minority students. AoEGT is housed at Hartford High School, the second oldest high school in the United States.

AoEGT has created and participated in many activities using the Connecticut Green LEAF School mission as a model, including recycling of classroom and cafeteria materials to serve as a model for other schools; e-waste recycling resulting in 20 tons of e-waste being removed from Hartford Public High School (HPHS) basement storage; a green waste sustainability composting project, which has resulted in several tons of leaf and plant debris being composted and used for bird habitat reconstruction; hosting an Environmental Summit on Sustainability; and hosting community outreach anti-litter campaigns and cleanups in association with the city of Hartford, Knox Parks, and UTC Aerospace Systems, one of the world's largest suppliers of technologically advanced aerospace and defense products.

The school uses local and/or organic foods from a local farm to school program in order to better incorporate healthy nutrition into the school day. The health teacher pursues a relevant curriculum on nutrition and healthy choices, and the school garden program provides fresh vegetables for students to take home to their families. Two teachers pick and purchase fresh apples each year to give to students who may not have access to locally grown produce. Students are given seeds and seedlings for home gardens. In 2014, tomato plants were given to 12 students to take home to plant. Another half-dozen students took home garden seeds provided free to the school from the University of Connecticut Master Gardener program.

AoEGT has sent more than 10 percent of each graduating class to study engineering in college, an impressive figure considering that the national average is five percent. Environmental and sustainability concepts are integrated into the curriculum in all subject areas, and students may study electronics, biotechnology, aerospace engineering, civil engineering, and architecture. All teachers are required to integrate reduce, reuse, recycle, and renew into their curriculum. The school's Green News Club publishes a quarterly magazine promoting sustainability efforts.

The school has conducted many field trips and activities that have focused on green technologies and relevant careers in green technology, including trips to the wastewater treatment facility, the Connecticut Resources Recovery Authority Trash Museum, the Yale Peabody museum, and the UTC Aerospace Systems campus in Windsor Locks, Conn.

The school has hosted an Earth Day Cleanup and Celebration for six years running. Hundreds of volunteers have participated in this event over the years. In 2014, Earth Day Cleanup was a kickoff event for the Clean Hartford Anti-Litter Campaign, a partnership with the city of Hartford and Knox Parks foundation. AoEGT has a green team formed of students and mentors. In 2013 and 2014, AoEGT's green team chaperoned Cub Scout Day for more than 200 Cub Scouts and their families at the Trash Museum in Hartford, Conn.

AoEGT is the Connecticut Green Building Council's 2014 Student Award of Merit recipient. This prestigious award was given to the academy for its nationally acclaimed Nepal Project, a wind/solar hybrid power system designed and built by AoEGT students for the village of Saldang, Nepal. AoEGT has been a site for Green Apple Day of Service for the past three years. During these events, more than 300 volunteers have completed over 1200 hours of community service. One hundred seventy-four volunteers from the school, the community, and UTC Aerospace participated in Green Apple Day of Service 2014. This group planted 400 bulbs, built more than 10 community garden beds, picked up over 1000 pounds of litter from the community, repaired and repurposed broken tables, and renovated two large landscaping beds.

Rogers International School, Stamford, Conn.

Engaging in inquiry-based units focusing on building global awareness

Rogers International School, a magnet school with an environmental focus, is located in Stamford, Conn., and serves 804 students in kindergarten through eighth grade. Approximately 51 percent of the students in the district receive free and reduced-price lunch, and 13 percent of the students are limited English proficient.

Educational units have environmental and health themes that help to engage students in active learning, such as nutrition, energy, and recycling. Many classes are taught outdoors. Teachers approach every lesson with the idea that students should learn the nuts and bolts of a problem, along with the proverbial whys and wherefores, so students gain a better understanding of each topic. Second-graders learn about soil and plant growth through outdoor exploration, as well as nutrition, natural resources, and conservation. Students in fourth grade learn about ecosystems, energy circuits and power, oceans and conservation, trash, overfishing, and climate change. In fifth grade, classes cover renewable energy and ecology. Students in eighth grade have an extensive energy unit, and participate in the Trout in the Classroom program. In this program, students help rear 200 trout eggs and release them into the Mianus River to help restock the population in the spring.

Environmental literacy is integrated at every grade. Many lessons and projects are hands-on, and students are able to demonstrate their knowledge through presentations focused on the environment. Students use the school's surrounding natural environment as a learning tool. Rogers works closely with the Greenwich Audubon, which typically holds three to four schoolwide assemblies per year to teach students about environmental topics, and has been working with the school to plant new trees around the playground to improve the air quality as well as to

provide natural shading for the area. Rogers has a partnership with the Long Island Sound education facility SoundWaters. Students also take trips to the Stamford Museum and Nature Center, eeSmarts energy efficiency learning center, and the Bartlett Arboretum. Students learn not just about typical career pathways, but also about specific scientific and environmental careers. For example, during the fourth grade oceans units, students become junior "oceanographers," modeling skills needed in this career path.

Rogers stresses the importance of nutrition and physical activity to all students. Students learn about the importance of nutrition throughout their time at Rogers, and all students participate in annual events that promote exercise. Every year, Rogers holds a program called Destination Fitness, where students walk to log miles and learn about the importance of fitness in their everyday lives. Destination Fitness commences with the annual Turtle Trot, where students walk their grade level number in miles and finish out the day with a celebration at SoundWaters. The school is a HealthierUS Schools Challenge Bronze awardee.

Rogers has an active green team of students, faculty, and parents, which is responsible for maintaining the grounds in the spring, and also pursuing additional goals to make the school more sustainable. The team has developed a successful program to eliminate Styrofoam trays from the school cafeteria and replace them with cardboard "food boats." The team also sends out environmental tips to parents in the school's electronic newsletter every month, avoiding excess paper waste.

Rogers' building is LEED Silver certified, and has many sustainable features. The school has dual-flush toilets, low-VOC paint, solar panels, a rooftop garden that is irrigated by a rainwater retention system, a cooling system using ice storage technology, and a self-sustaining ecosystem surrounding the school. The school is 100 percent compliant with the Connecticut school environmental laws, including radon testing, pesticide use, vehicle idling, building facility operation checklists, posting of shared information, IAQ program implementation, recycling, green cleaning, carbon monoxide monitoring, and asbestos requirements.

The school grounds have been designated a Wildlife Sanctuary by the National Audubon Society, and the natural meadow and marsh habitat that surrounds the school is an official U.S. Fish and Wildlife Service Schoolyard Habitat. The school worked with students and parent volunteers to set up a Purple Martin nest house on the school's campus, with the goal of establishing a Purple Martin colony in the area.

Greens Farms Academy, Greens Farms, Conn.

Creating a passion for environmental learning to last a lifetime

Greens Farms Academy (GFA) believes that environmental conservation starts with the individual. A major recurring theme at GFA is sense of place. The school operates with the belief that if it can connect students to their surrounding world, they will value and appreciate it, thereby gaining a desire to protect and conserve nature. GFA's unique setting along Long Island Sound, which includes a rich and diverse salt marsh, Audubon trails, and Burying Hill Beach, allows the school community to take advantage of a sprawling "outdoor classroom" for hands-on, active learning.

As a prekindergarten through 12th grade independent day school, GFA has the ability to influence students from early childhood to adulthood, and is dedicated to guiding students through a course of study encompassing academics, arts, and athletics. In a supportive community built on trust, students are given the opportunity to become critical, independent, and creative thinkers. Students are encouraged to explore passions that will sustain them throughout their lives. By practicing good citizenship, demonstrating moral character, and actively engaging in community service, the students embody the school motto, Quisque Pro Omnibus — Each for All.

Many GFA classes are centered around the Harkness Table, where students engage each other in discussion, defending and exchanging ideas, skillfully guided by their teachers, who look for ways to connect students with their passions. The school encourages students to question assumptions, think critically, and be intellectually curious. It offers numerous opportunities for study of the natural environment. Recent additions to the curriculum, such as sustainability, robotics, the World Perspectives Program (including international relations and economics), and the Global Online Academy give students a range of subjects to explore. Even high school language classes consider the environment when studying other cultures. Prekindergarten through fifth-grade students receive environmental education through the Lower School's Seed to Table program. Students also learn to make healthy decisions in their formal health and nutrition education.

GFA maintains a close working relationship with the Connecticut Audubon Society, which has about 40 miles of woodland trails that are maintained by middle school students. Through a scholarship program, the school has brought in speakers that include conservation educator Philippe Cousteau Jr., a NASA engineer, and a science entrepreneur. Additionally, GFA has worked to update its campus to

promote conservation and provide a healthy school environment. GFA uses organic fertilizers to improve the health of the soil, and regularly monitors and maintains equipment to maintain IAQ. The school contracts with Filk Independent School Dining, which has a strong nutrition and healthy food sourcing philosophy. GFA has retrofitted toilets and faucets with low-flow fixtures and valves to conserve water. The school is constructing a new LEED-certified performing arts center, and has built parking areas of gravel to allow for water infiltration.

GFA's mission with respect to sustainability is to investigate and implement solutions that lead to a more efficient and low-impact campus. Part of this effort is to engage the entire community in events and education so that they understand how their decisions and actions can affect the environment. GFA works to engage the community beyond Connecticut, as the organic garden coordinator has mentored an environmental educator at Washington D.C.'s Georgetown Day School. GFA strives for sustainability in each part of the school system including academics, food sourcing and serving, water and energy use, waste, and materials and purchasing.

Stamford School District, Connecticut

Lettuce help you conserve: Saving dollars while learning stewardship and wellness

The Stamford school district, located in Stamford, Conn., includes 20 schools in an urban/suburban city. The district serves 16,149 students, 51 percent of whom are eligible for free- or reduced-price lunch and 13 percent of whom have limited English proficiency. Stamford has a graduation rate of 91 percent and attendance rate of 95 percent. The district is always working to improve programs that will improve the learning environment. Programming includes education about and support to health, physical wellbeing, the environment, and sustainability. With the backing of district officials, many principals, teachers, and parents have been able to pursue sustainability and health initiatives in individual schools.

The Stamford district has encouraged its schools to participate in the Connecticut Green LEAF Schools program, a statewide green schools tracking and certification program. Twelve schools are registered, and eight have completed comprehensive self-assessments. Stamford encourages its schools to become learning laboratories. Six schools are magnet schools, three of which are science-themed. Students in Stamford learn about environmental science and sustainability through curricula and after-school programming offered at all schools. The science curriculum associate is an advocate for incorporating environmental issues into the curriculum, and organizes a STEM showcase every year for all of the schools in Stamford to attend. Through local partnerships with Audubon Greenwich,

SoundWaters, Bartlett Arboretum, and the Stamford Museum, Nature Center, and Environmental Council of the States, students learn about the environment, nature, conservation, and preservation. Projects completed by students are on display at the Stamford Government Center, including an exhibit about animals in the classroom, and another on building a self-sustaining ecosystem. Many students participate in SoundWaters' Young Mariners program, which culminates with students spending a night on the SoundWaters boat while learning about the local Long Island Sound ecosystem and environment. Audubon Greenwich has helped establish Schoolyard Habitats, which are provided with grants to encourage the use of education in these habitats.

Kindergarteners and first-graders learn about weather and animals. Second-graders study soil and plant growth, and are treated to a maple sugaring field trip. Ecosystems, eco-column project, energy circuits, power, and electricity come into play in fourth grade, while fifth-graders study renewable energy. Ninth-graders build solar cookers. Teachers use Project WET and PLT materials and outdoor classrooms to integrate sustainability at every grade level.

Food options contain daily fruit and vegetable selections, many locally sourced. Fried food is not available in cafeterias, students are encouraged to bring healthy foods, and vegetarian and vegan options are available every day. All 12 elementary schools have been recognized as HealthierUS Challenge Bronze Award Winners. Schools incorporate personal health and fitness logs to stress the importance of physical activity. Many schools have set up gardens, in-school and after-school health programs, and walk-a-thons. The district has switched to all Green Seal cleaning products.

The leader of the Dolan Middle School garden club recently founded GIVE: Green Initiatives for Vegetables in Education, which is working to support existing Stamford school gardens and to bring gardens to all schools. For the past three years, GIVE and Stamford's Garden Club have hosted the annual Lettuce Challenge, where students from grades two through 12 are challenged to grow and nurture a head of lettuce for six weeks. Last year, 900 students from 18 schools throughout Stamford participated. Students gathered in the Stamford Government Center to display their plants, and winning plants were selected.

Two full-time energy managers look for projects that can reduce the district's energy costs and carbon footprint. Projects completed include solar panels, a LEED Silver certified kindergarten through eighth grade school, Vending Misers installed on all vending machines, Fridgetek fan controllers installed on all walk-in refrigerators, heating and cooling set points controlled through an energy management system, and monitoring all schools' progress with ENERGY STAR Portfolio Manager. Through lighting retrofits, building retrocommissioning, and HVAC upgrades,

Stamford's energy managers have reduced the district's electric consumption drastically in the past three years, resulting in savings of nearly $500,000 per year and $1,400,000 in five years. In 2014, Stamford Public Schools was the Going Green Award Winner for the Connecticut Association of Boards of Education Communication Award, for the awareness raised around the district's LED retrofits and energy conservation behavioral change. In 2014, Stamford's Board of Education also received First Honors in Connecticut's Power of Change: Energy and Innovation category.

Delaware

Linden Hill Elementary School, Wilmington, Del.

Young artists get green lessons at a school that leads its district in recycling

Linden Hill Elementary School's staff and students collaborate to improve environmental and sustainability education, activities, and planning within the school community. They meet monthly to discuss progress, troubleshoot obstacles, and brainstorm next steps. This committed group consists of homeroom teachers, arts teachers, and administrators dedicated to incorporating green principles into the education of all students and the functioning of the school building, through both short-term and long-term goals and projects.

Linden Hill, serving 40 percent free and reduced-price lunch eligible students, leads the community in recycling by working with the Red Clay School District's single-stream collection, and also recycles materials and products not currently accepted by the district-sponsored program. The school is working with administrative and custodial staff to ensure fidelity to recycling programs and proper disposal of recyclable and non-recyclable waste, and cooperates with district staff in complying with programs and initiatives to reduce water and electricity, including use of low-flow plumbing fixtures and motion-activated lighting. The school has received ENERGY STAR certification every year from 2008 to 2014.

Before the school district supported single-stream recycling in all schools, Linden Hill staff and students explored options for the school and formed partnerships to facilitate recycling. These included recycling milk bottles with Terracycle, recycling paper with Abitibi Paper Retriever; recycling batteries and ink cartridges through local drop-off programs (facilitated by student collection teams and teacher delivery), and recycling plastic bottles and cans through student collection and teacher dropoff at local recycling collection points. The student Recycling Squad was made up of model students from classrooms across grade levels, who not only collected recyclables, but also patrolled the school, posting reminders to staff and students to

recycle, and issuing tickets when they found recyclables in the trash collection containers, or trash in recycling containers.

Linden Hill educates about making positive choices in diet and exercise. It offers Girls on the Run and uses Fitnessgram. Staff and students eat healthy meals in the cafeteria; benefit from district wellness policies limiting sugary foods and defining healthy snacks; and celebrate birthdays and holidays in class without food. Physical activity is emphasized not only in physical education lessons (where instruction focuses on taking responsibility for healthy lifestyles) and activities, but also in 30 minutes of recess daily as well as classroom-based programs that emphasize movement.

In Pillar III, Linden Hill has shown the most growth by offering sustainability education in homerooms, related arts classes, and after-school and extracurricular activities throughout the school year. The green team has organized Green Lessons and shared them with all teachers for use in homerooms on every Pride Day, when school spirit and community values are celebrated. Every student from kindergarten through fifth grade is exposed to Green Lessons in their arts classes throughout their elementary school experience. Teachers have been trained on climate change according to the Next Generation Science Standards by NASA. Linden Hill staff also make use of Roots and Shoots, Odyssey of the Mind, and Hour of Code materials.

Staff and students share a sense of urgency to continue improving environmental and sustainability education and practices. Successes worth celebrating and building on include student-driven composting, wildlife habitat construction, and tree plantings. The green team has initiated an application to participate in the Delaware Pathways to Green Schools partnership with the Delaware Valley Green Building Council. Teachers are organizing student clubs to lead schoolwide initiatives based on Eco-Schools USA programs. There is growing momentum around green-themed clubs, including the recycling squad, garden club, and composting.

As Linden Hill's green focus broadens and green initiatives gain momentum, these initiatives will continue to empower students to learn about responsible citizenship in a global economy, incorporate best practices for environmental stewardship and sustainable living, and share the importance of these endeavors with surrounding communities.

Mt. Pleasant Elementary School, Wilmington, Del.

Dedicated green classroom professionals implement healthy, sustainable changes

Mt. Pleasant Elementary (MPE) School, a Title I school, recently completed a year of great change and hard work to become a green school by engaging in environmental and sustainability programs that expose teachers, students, families, and the community to new environmental learning and practices on a daily basis. This was made possible by participation in the Delaware Valley Green Building Council's Pathways to Green Schools program. A school green team of teachers and administrators was formed to develop, evaluate, and execute learning projects. The projects required a high degree of planning and collaboration, and extreme dedication among multiple stakeholders and outside entities. As a result of this stewardship, the school and community have been forever positively changed.

Greening at MPE was multifaceted. MPE participated in a comprehensive energy audit, adopted single-stream recycling, and started a school garden. In March, MPE implemented several recommendations from the energy audit by the University of Delaware. The school acquired a waste hauler system that provides large rolling recycling bins to facilitate collection by custodial staff. Funds earned through the school's Terracycle recycling program were used to purchase additional bins for classrooms and common spaces. In September, MPE was awarded a grant from the Delaware Department of Natural Resources and Environmental Control to purchase bins, containers, and signage. MPE is proud to be the first school in the district to implement single-stream recycling. MPE held a community recycling event on in November 2014 called Greenfest. Partnering with the Delaware Solid Waste Authority resulted in collection of 11,480 pounds of paper for shredding, 24,879 pounds of electronics to recycle, and 13,154 pounds of household hazardous waste to dispose.

The school participates in Safe Routes to School, has implemented IPM, uses IAQTfS, and has a comprehensive asthma management plan.

In July, three classroom teachers passed the USGBC Green Classroom Professional Development Course. In September 2014, the teachers developed an in-school service presentation for colleagues discussing a list of 10 Green Guidelines to implement within classrooms. Plans include performing periodic classroom walkthroughs to gauge participation and provide feedback. A student green team recently was formed to focus on energy conservation. Students lead energy conservation in classrooms and computer labs, and provide feedback to teachers and students on how everyone can reduce energy use in the building.

In June 2014, MPE received a grant from The Patti Mishaw Foundation to fund a school garden, and partnered with Healthy Food for Healthy Kids for the build. Over 500 students, MPE staff, PTA members, and families participated in garden building, soil preparation, planting, watering, and harvesting, and a healthy recipe was sent home with every child. Students now enjoy healthy snacks from the garden, including radishes, turnips, and various types of lettuce. Classes routinely participate in STEM learning activities in all areas of science, including learning how to grow and harvest food from the school garden. Through these activities, MPE has expanded the culture of promoting environmental stewardship, and formed partnerships with nonprofit and charitable organizations.

Kirk Middle School, Newark, Del.

Agriscience in the courtyard, recycling in the news

Kirk Middle School students are setting an example for other schools across the state, building school-to-school partnerships. Kirk's recycling club teamed with the school's 4-H after-school program in September 2013. Together, the two clubs have assisted nearby Christina Middle School in starting a recycling club, which has grown to 24 students. Students have also been active in building a Monarch Butterfly Waystation, attending field trips that enhance their environmental literacy, participating in a tri-state contest sponsored by the Philadelphia Zoo, and conducting energy and air quality audits.

The student leaders forming the recycling club are the primary collectors of recyclable materials at Kirk, and take responsibility for the data collection and reporting. Staff have greatly increased their participation in the recycling program as a direct result of education provided by the students, who also put out a newsletter, Recycle News. These efforts have translated into measurable results. Recyclable materials collected have increased 245 percent in one year. Staff members also have helped to create a culture of recycling at Kirk, including the custodial staff, which has come a long way in making the program a success by identifying recycling materials and disposing of those materials properly.

Kirk has an energy management plan in place. The school participates in a demand reduction program during the months of June through September each year. On specified days, the building sheds all possible energy generated by lights, HVAC equipment, roof top units, and miscellaneous computer equipment. The school also has renovated two sets of three of the major restrooms in the building, installing waterless urinals, metered flush valves, metered faucets, and hand dryers in each restroom. Kirk has recently launched its first survey about IAQ with the school

faculty, with measuring parameters including temperature, relative humidity, air movement, ventilation, filtration, fungal bioaerosols, bacterial bioaerosols, and pressurization. Kirk plans to repeat the survey every six weeks.

The school's curriculum reflects its environmental focus as well. At the sixth grade science level, students learn earth history and properties of matter. At the seventh grade science level, students learn diversity of life and genetics, and at the eighth grade science level students learn ecosystems and weather. Additionally, the agriscience program offers courses in grades six through eight, with students learning wildlife and environmental sciences (including sustainability concepts) as well as domestic plant and animal sciences. Students in the agriscience program monitor a number of different things, such as the size and weight of the 13 box turtles in the courtyard, daily weather conditions, and the growth and development of embryonic chickens through egg incubation. They use this information to track regular changes in each of these areas, and make predictions and modify variables to affect the results.

The school's 8,000 square-foot courtyard is the perfect outdoor space for learning. Sustainability is the driving force behind the decisions made in planning the courtyard use areas. Teaching students – and other Kirk community members – about composting, raising and harvesting food plants, reducing erosion and pollution, and fostering habitat for wildlife are integral components of the program. Space has been allocated for a pond area and duck enclosure, poultry enclosure, wildfowl enclosure, rain garden, compost areas, raised gardens, in-ground gardens, greenhouse, herb garden, bird and butterfly garden, and mini-orchard.

Kirk continues to work toward having a school that performs all environmental activities with consistency, and is encouraging the school district to develop comprehensive sustainability programs because this will guarantee sustainability for Kirk and move other schools to better environmental practices.

Department of Defense Education Activity

Charles P. Murray Elementary School, Fort Stewart, Ga.

A solar-powered school with students who run with the power of the wind

Charles P. Murray Elementary School's new facility, which opened in fall of 2014, was designed and constructed to meet LEED Silver certification standards. All school stakeholders, including architects, engineers, district support staff, teachers, and students, are knowledgeable about the sustainable resources found both inside and outside of the school building, and students keep track of the energy data collected from the alternative energy sources. The school's state-of-the-art design

helps to promote a healthy lifestyle for all installation stakeholders by maintaining a cleaner community around United States Army Garrison Fort Stewart.

During the design planning, building construction, and progress monitoring of the school, environmentally-conscious team members designed a facility that meets green energy goals by providing alternative energy sources including a wind turbine and over 450 solar panel collectors installed on the roof of the school. The building's water return system minimizes the use of both water and energy through a carefully planned hot water design that uses water heated by solar energy. The building minimizes water use with efficient appliances, like controlled dishwashers and ultra-low-flow flush toilets. The grounds include sustainable features that help filter and control stormwater runoff, such as pervious parking surfaces, retention ponds, and native rain gardens. The school is working with the University of Georgia to identify and label the various native grasses and plants in the rain garden.

Students carry reusable water bottles. The school's food service program does not serve fried foods. The cafeteria serves fresh-baked whole-wheat breads and other whole-grain products. Murray uses Green Seal cleaning products.

Teachers have participated in professional development sessions focusing on oyster restoration, collecting buoy information, and data analysis of the nearby ocean at marine environmental awareness workshops. The outdoor courses included kayaking along tributaries and studying salt-water and wetland habitats. Faculty have received Engineering is Elementary kits for every classroom to instruct on topics of solar energy and wind energy effectively. Second semester workshops will include using the engineering design process to incorporate the use of solar energy.

Murray's second graders have participated in an energy awareness project with the local energy provider, the Touchstone Energy Cooperative, Canoochee Electric Corporation, which provided energy awareness kits for all classes. The kits include program plans to reduce energy consumption at school and home. Company representatives assist with energy audits and provide shared energy data. The company provides comparative data from other schools, and the information is used to enable students to read tables, charts, and graphs. Sixth-graders write e-letters to premier wind energy analysts to determine the feasibility of wind turbines off the Atlantic Ocean's coast in South Carolina and Georgia. Students investigate wind energy companies, sketch wind turbine designs, and research turbine models online.

Students discuss energy conservation and brainstorm ways to save more energy, such as making sure the lights are turned off when they go to lunch and suggesting that custodians cut lights off when they finish work in a classroom. The school participates in the NOAA-sponsored Project GLOBE (Global Learning and Observation to Benefit the Environment). Murray educates students on green

technologies with visits from the Georgia Forestry Division, NOAA, University of Georgia Marine Extension Services, and the Georgia Directorate of Public Works Environmental Division.

Wiesbaden Middle School, Wiesbaden, Hainerberg, Germany

Partnering with the military community to apply 21st-century concepts to learning

The entire Wiesbaden Middle School (WMS) community is committed to reducing carbon footprint, developing healthy habits, and building leadership skills for a better tomorrow.

STEM is the heart of the school, and three community partnerships help drive this mission. The school works closely with the U.S. Army Corps of Engineers-Europe (USACE), the Defense Science and Technology Center-Europe (DSTC-E), and the Defense Commissary Agency (DeCA). Together, military and civilian partners support the middle school community by integrating STEM in classrooms, helping students understand practical sustainability applications of STEM, setting education and career goals, and promoting digital learning.

WMS' partners are committed to the highest student achievement and embed many environmental topics in their outreach activities. Each August, school administrators share standardized test scores, performance standards, and textbooks with partners, who then design outreach activities. USACE has five formal outreach activities at WMS: SKYPE with SCIENCE; Engineers Week, when engineers present structural engineering, alternative energy and fire protection concepts; Take Your Child To Work Day; Earth Day, when USACE environmental technical experts speak about natural resources, green energy and environmental careers; and a STEM Career Student Essay Contest, in which winners spend a day shadowing engineers at the USACE office.

USACE-Environmental Branch collaborates with seventh grade teachers and the principal on a two-year project to expand environmental initiatives at the school, developing a horticulture garden, a pollinator garden, and a fruit and vegetable garden on school grounds. An interdisciplinary team of teachers and technical experts, including chemists, biologists, and engineers, guide learning in the student-created gardens. In this outdoor classroom, students engage with hands-on environmental and sustainability concepts, explore career opportunities, and document their experiences. Earth Week highlights WMS' efforts in environmental awareness. Last year, students created sculptures from recyclable materials and

decorated the school foyer. To reward students who recycle, the school began the I Got Caught Recycling program.

DSTC-E created more than 75 standards-based lessons, which have provided real-world connections to STEM careers in military and civilian life. DSTC-E supports the school's eCybermission teams, which are working on alternative energy sources, health, and wellness, and environmental topics. Students are not simply listening to the details of a STEM career, but are able to put their hands on the robotics, weather stations, and operational controls many soldiers use in day-to-day life in their military careers.

The school's partnership with DeCA is the linchpin to their nutrition literacy standards. DeCA supports WMS students during Take Your Child to Work Day by providing a work location for students whose parents are deployed. Commissary personnel serve as educators during the school's study trips, teaching students about proper nutrition, healthy snacking, and good shopping habits. DeCA also supports the school's Fueling the Future fun-run with the Commanding General each year by supplying water and fresh fruit for community members and students. WMS' commitment to a healthy environment and lifestyle requires a year-round effort. WMS has funded a bike club, an outdoor recreation club, a cooking club and a cross-country club.

In the past two years, WMS has increased recycling efforts and environmental awareness among students, faculty, and staff. Teachers and students are also committed to turning off lights when not in their classrooms as well as conserving water, reducing utility costs by over $27,000 in one year. WMS is working toward Green Boot certification and has a sustainability office. It became a LEED registered facility in 2011 and is building a new LEED school for July 2018 completion. WMS implements good facilities maintenance practices, such as IPM, maintaining high IAQ standards, and use of green cleaning products.

District of Columbia

The George Washington University, Washington, D.C.

Capital campus; comprehensive sustainability

George Washington University (GWU), located in the nation's capital, enrolls over 10,000 undergraduate and almost 15,000 graduate students. The university has adopted a comprehensive approach to building a sustainable campus community, recently earning a Gold rating from STARS. GWU also was recognized for sustainability achievements on *Sierra* Magazine's list of the greenest schools in the nation, ranking number 12 last year.

The university community includes over 170 faculty engaging in sustainability research, 38 undergraduate and graduate sustainability-related programs across various disciplines, and 345 courses related to sustainability. Classes for the university's interdisciplinary sustainability minor are designated as Green LEAF courses, and range from environmental and resource policy and geological sciences to anthropology and religion. GW's living labs include substantive work by students working with faculty and staff that involves active and experiential learning and contributes to positive sustainability outcomes on campus.

Eco-Reps are a part of the student-run Campaign GW, an ongoing forum for students to share their ideas directly with the administration and participate in the decisionmaking process on future GWU campus development issues, including sustainability. The Sustainable Student Leaders (SSL) program connects student leaders from a variety of campus green organizations. GWU's Green Alumni Network was created in 2009 to engage a broad range of alumni with an interest in sustainability. The Green Office Network is the primary faculty and staff sustainability engagement program, improving awareness, building community, and empowering staff to make positive, healthy changes.

In 2012, the university released a comprehensive sustainability strategy for GWU's operations and administration, including a water plan and a climate action plan. GWU's GWater Plan is one of the most comprehensive plans for water sustainability issued by a university. Through efforts to reach its Climate Action Plan goals, GWU launched the groundbreaking Capital Partners Solar Project Partnership. The partners worked with developers to build one solar farm and are working on two more in North Carolina. Through the partnership, solar panels convert solar energy to electricity then transmit it through the power grid, which GWU and partners use for electrical power needs.

The university adheres to, and when possible, exceeds Washington D.C.'s policy to achieve at least LEED Silver status for all new construction and major renovations. GWU's Square 80 Plaza is a certified LEED Sustainable Site, one of only 34 such certified sites in the country. The campus also includes one LEED Platinum building, eight LEED Gold buildings, and one LEED Silver, for 18 LEED registered or certified constructions.

In partnership with Capital Bikeshare, GWU houses bicycle stations available to staff and students in four campus locations. The university offers pretax bus and rail benefits. To promote carpooling, the GWU NuRide program connects commuters from around the metropolitan area, and the university has partnered with ZipCar to provide car-sharing services for faculty, staff, and students. The school offers green move-outs and participates in Keep America Beautiful Recycle Mania.

The university strives to manage landscapes in a responsible and sustainable manner with xeriscaping, pollinator gardens, and water cisterns. The Grass to Gardens effort replaces unusable patches of turf with native plant beds to reduce runoff, bolster biodiversity, attract native invertebrates, and improve soil health. The Edible Landscaping program uses annual and perennial edible plant material to create aesthetically pleasing, edible garden beds throughout campus. The campus is pesticide-free.

In 2014, the Washington Business Journal named GWU one of greater Washington's healthiest employers, the only higher education institution on the list. Employees can contact the GW Wellbeing Hotline to receive free, confidential counseling from clinicians. To meet student health concerns, clinicians at GW Student Health Services provide immunizations and care for medical issues. Students also may access clinical mental health services and mental health promotion efforts through the University Counseling Center. The Urban Food Task Force and the student-led Food Justice Alliance promote healthy, sustainable food at GWU and in D.C.

Florida

Manatee Elementary School, Viera, Fla.

What have you been doing to take care of the earth?

Manatee Elementary School's commitment to being greener every year is demonstrated in efforts and projects schoolwide. Manatee received EPA ENERGY STAR accolades in 2011 and 2012 with Portfolio Manager scores of 80 and 86. The school implemented a comprehensive recycling program, including participation in alternative recycling programs such as Terracycle, to help reduce the amount of waste sent to the landfill. Because Terracycle makes donations to the school for each load of waste, this has become a very lucrative partnership for the school. The Manatee Green Committee has also created a collection box to gather waste from families, providing a dropoff area where the community can participate in school recycling efforts.

Looking for ways to improve its IPM program, Manatee invited the University of Florida to evaluate its current program. According to the report, school sanitation is very good, and overall the school earned a 95 percent on the rigorous University of Florida checklist.

Manatee has fully embraced the nutrition and environmental guidelines set by Brevard County Public Schools. Manatee has received a five-star cafeteria award for eight out of 11 years by offering a variety of balanced and healthy meals. The

school provides multiple opportunities to keep students, families, and staff active and informed through programs such as EPA's SunWise Family Wellness Night and the American Cancer Society's Sun Protection program.

In 2012, Manatee began the Morning Mile, a program offered daily before school to grades kindergarten through six. The program consists of walking or running laps on campus while volunteers keep track of the miles. After every five miles completed, students receive a sneaker charm to add to their reward necklace. The reward motivates students to exercise, and helps them focus when they get to their classroom. Another very successful program that engages the community is the annual softball tournament. Manatee's team consists of staff and faculty members, who have a friendly competition against with other schools at the end of each school year at a local stadium.

Teachers are encouraged to participate in conferences, programs, workshops, and trainings on environmental subjects. In 2014, a Manatee teacher participated in the Green Strides Best Practices Tour to see what other schools were doing that could be implemented at the school. As part of the Keep Brevard Beautiful School Environmental Award, every month teachers are asked to report how they integrate environmental concepts into their classroom.

Students participate in an Environmental Club (E-Club) to further their knowledge about the environment and increase their participation in campus and community activities. Activities such as campus clean-up on Earth Day, beach clean-up, and helping maintain the school butterfly garden are some ways E-Club members help their community. STEM studies are integrated with field trips to provide students with hands-on experience. Guest speakers from NASA, Keep Brevard Beautiful, and Brevard County Solid Waste Management Department come to the school to present career options to students and talk about their own experiences in their field. Field trips to the Nature Center to learn seining techniques also open up careers and areas of work that might interest the students.

All subject area standards address environmental impact of human actions and the study of the environment itself. To ensure deeper understanding of these concepts, teachers supplement studies with community events, field trips, extra activities, art shows, and writing incentives, which include the school's Writing Wall of Fame and Book Oscars. Students role play books in the classroom and school library about the environment, pollution, environmentalists, and sustainability.

Dr. Seuss's birthday celebration explores different themes, and science fairs offer graphing experiment observations. Field trips include seining in the Indian River Lagoon and camping at Camp La-No-Che, a three-day, two-night camping trip where fifth-grade students are exposed to a variety of activities including swimming,

archery, rifleman-ship, hiking, nature studies, campfires, and leather stamping. At the Brevard Zoo and SeaWorld, students go behind the scenes and learn valuable information about the animals. The school participates in the Green Apple Day of Service and runs an Adopt A Tree at Manatee campaign.

Students experience nature in a multi-disciplinary manner, and practice various skills including team building, problem solving, and perseverance. In every single area, Manatee Elementary is looking into ways to excel and become more environmentally responsible in its practices. Every year the school has made efforts to improve and achieve the ultimate goal to become the best school it can be for its students, families, staff, community, and the planet.

Pine View School for the Gifted, Osprey, Fla.

Where blue and gold make green

In three short years, Pine View School for the Gifted has built a common understanding of how working together across grades and disciplines results in clear improvements in environmental stewardship, healthy living, and sustainability education. The school and curriculum span grades two through 12, affording this institution the unique opportunity to positively affect over 2,200 students at the elementary, middle, and high school levels.

Pine View School reduces environmental impact by promoting the use of renewable energy, reducing energy use, and recycling. Pine View protects its 76-acre natural setting campus, lakes, and watershed by limiting chemical use, avoiding irrigation, leaving pathways unpaved, and maintaining some parking areas as natural porous shell instead of pavement. Over a third of the campus consists of regionally appropriate vegetation, which provides wildlife and wading birds with refuge throughout the campus.

In 2011, Pine View partnered with the University of Central Florida Solar Energy Center to install a 10 kW solar array as part of the SunSmart E-Shelter Program. Over the past three years, the solar array has generated an estimated 50,000 kW/h. Pine View earned EPA ENERGY STAR certification in 2012, and has reduced its annual non-transportation energy use by 12 percent as compared to the 2007 baseline year. The school has saved thousands, and has helped the Sarasota School District save $16,000,000 in energy costs since 2007.

Pine View has received multiple awards for its many recycling initiatives and programs. The school has diverted 43 percent of its solid waste from landfill through

recycling and composting. In the past two years, the E-Waste Tuesday program has helped divert 2,300 pounds of electronic waste from the landfill.

Making healthy life choices is part of Pine View's core values. In 2014, over 400 runners participated in the school's first sponsored five-kilometer race and one-mile fun run. For the past three years, Pine View has offered a walking school bus for elementary students twice a month. The program is funded by Safe Routes to School through the U.S. Department of Transportation and teaches raises awareness among students and parents of the benefits of walking to school, while reducing emissions and fuel use. Students, parents, and staff all can join walking clubs and running teams to help reach their fitness goals together. A fitness highlight is the Peramathon. Classes walk or jog as many laps as they can around the track to their favorite music during this full-day, action-packed event.

Pine View participates in the USDA's HealthierUS Schools Challenge, Alliance for a Healthier Generation's Healthy School Program, and a farm to school program. The school maintains a healthy snack policy, and offers salads and healthy foods to students and staff daily. The county offers an employee wellness program, and yoga is offered to staff once a week.

Menus are color coded so that making healthy choices is easier. The food gardens on campus consist of a tower garden where herbs and tomatoes are grown, and six raised garden beds that multiple classes use throughout the year for a wide variety of crops. The high school sustainable gardening club also has multiple gardens, including an organic garden and a green roof project.

Students participate in hands-on labs, science fairs, and outdoor classroom science field trips to state parks. Students also learn respect and appreciation of the environment through art and music. Outdoor learning opportunities include sustainable gardening, green roof work stations funded by Toyota, a Nature Trail, and a solar array. In 2012, Pine View was awarded the Florida Green School Network Classroom Award. Since 2010, students have won Junior Solar Sprint awards each year at the EnergyWhiz Olympics run by the University of Central Florida's Solar Energy Center.

At the elementary level, the foreign-language department studies marine vocabulary while singing songs from *Finding Nemo*. Names of animals being studied are used in sentences for story creation. Students learn foreign-language vocabulary to celebrate Earth Day, including the creation of labeled posters about nature.

At the middle-school level, the math department teaches lessons through the use of nature and photography. Students photograph examples in nature that illustrate math concepts. The photos are displayed in class, and parents visit with students to

solve the related math problems together. Cross-curricular teaching using nonfiction articles and books read in language arts classes coordinate with the earth science units. For example, students learning about ocean currents and gyres in science class read about the Great Pacific Garbage patch in language arts class.

In high school, students study sustainability in economics classes, put on a "Trashion Show" in their advanced placement (AP) Environmental Studies class, and volunteer for coastal clean-ups. A unique band, called The Garbage Men Band, uses instruments made of repurposed materials to spread the word about recycling. Students are encouraged to go into sustainability-related careers, attend sustainability conferences, and visit organizations like The Florida House Institute.

Odyssey Charter School, Palm Bay, Fla.

Strengthening the relationship between environment, learning potential, and health

Odyssey Charter School, a tuition-free public school, serving 68 percent free and reduced-price lunch eligible students, and Florida's first green and healthy public school building, was founded by a visionary Montessori teacher, entrepreneur, and holistic education pioneer, Constance Ortiz. The Odyssey Whole School-Whole Child education model combines the best practices in education and child development with the best practices in healthy living and environmental stewardship. This innovative model recognizes and advances the relationship between the learning environment, learning potential and gains, and the health of the individual. Wellness, connections to nature, sustainability, experiential learning, and physical exercise are essential elements of Odyssey's education model.

Odyssey's flagship campus was designed and built to maximize occupant health and minimize environmental impact. Design features integral to Odyssey include polished concrete or natural cork tile floors; low- to no-VOC paints; concrete exterior walls insulated on the exterior side to block heat gains for enhanced energy efficiency; and a natural-earth parking lot to mitigate water, heat, and pollutant stresses on the environment. All classrooms are fully daylit, with clerestory windows and features to eliminate direct solar heat gains, glare, and uneven light, minimizing the use of artificial lighting.

Odyssey uses HVAC with central chilled water, air conditioning that is coupled with thermal storage, and de-humidification and full high-efficiency particulate filtration of fresh air to create superior IAQ. Cooling is generated off-peak using the excess energy generated by electrical utilities' plants at night. Odyssey uses solar thermal water heating, and the roof is designed to permit installation of a photovoltaic system

that would allow the school to achieve a full net zero energy capability. Other features include a rainwater collection system from roof runoff; 90 percent of rainwater is percolated back into site with the balance piped into an adjacent stormwater retention system. The school's facilities master plan includes designs for future collection and use of rainwater for flushing the toilets. The building has an ENERGY STAR Portfolio Manager score of 100.

Innovative practices and healthy educational elements include wildflower and butterfly gardens; vermiculture studies; hydroponic gardening combining gravity flow with a solar powered pump feed; minimal turf areas; an annual five-kilometer run; walk-to-school days, an observation and jogging trail through campus woods for exercise and education; certification as an NWF campus; sensory gardens for every grade level to promote student and staff wellness. The campus includes educational signage and students offer tours.

The school offers onsite composting of food waste; reusable meal trays and utensils; and the procurement of local foods from several farm to school partners. The school celebrates an annual family harvest luncheon and was a Keep Brevard Beautiful winner in 2014. Odyssey has student, teacher, and parent green teams that involve students and community in the recycling process and raise awareness of how trash affects the health of the planet. Students are trained on the building ecology and campus design features, using the school and grounds as a framework for inquiry, action, service, and experiential learning.

Environmental education and green careers are promoted via courses such as Green Technologies, Innovations and Inventions, Horticulture, and Ecology, as well as on Careers Day and through partnerships. Service learning projects are focused on enhancing the environment and mitigating environmental issues such as beach clean-ups, the annual campus Trash-Bash to help the gopher tortoise habitat, and eco-scaping of shoreline areas to reduce pollution and runoff of chemicals into the Indian River Lagoon. Students also participate in the annual Green Apple Day of Service, and visit Fish and Wildlife Conservation centers and a solar energy center to engage in real-world learning.

Columbia University's Teachers College and the Center for Eco-Literacy provide nutrition education and organic gardening curricula; and Florida Tech University's Biology, Engineering, and Environmental Science/Sustainability Departments promote joint teacher and student collaborations to raise student achievement and interest in higher learning, particularly in STEM-related green careers. The school obtains other teacher professional development and curricular materials from Project WET, Project WILD, Waste Management, NASA, and the Florida Department of Environmental Protection.

Georgia

Dr. M. H. Mason Jr. Elementary School, Duluth, Ga.

Project-based STEM learning fosters a sustainable community for future generations

Dr. M. H. Mason Jr. Elementary School (Mason), built in 1996, looks beyond today's classroom to provide learning environments for tomorrow's students. The school employs best practices in operations management, ensuring that buildings, grounds, and athletic facilities are safe, energy-efficient, and well maintained. With an enrollment of 950 students, 42 percent of whom are eligible for free- and reduced-price lunch, Mason is a part of the largest school district in Georgia, Gwinnett County Public Schools, a 2013 District Sustainability Awardee.

Mason is ENERGY STAR certified with a score of 94. Its energy-efficient upgrades include lighting retrofits in classrooms, occupancy sensors, automated energy management systems, and variable frequency drives. In partnership with nonprofits Gwinnett Clean and Beautiful and the Clean Air Campaign, Mason has a multidisciplinary team that focuses on waste reduction and recycling, air quality, energy conservation, water conservation, and green space preservation. Annually, the school recycles and diverts 50,000 pounds of material from the community's landfills.

Mason participates in a Safe Routes to School program that hosts four Walk and Roll events per school year. Each event features a large sign-in poster with pictures, prizes, music, participation stickers, drinks, and snacks. Ninety-six percent of students help to improve air quality and reduce impact on the environment by riding the bus, riding a bike, or walking to school. Mason also participates in a no-idling program, which is designed to reduce idling rates in the bus and car rider lines. Signage and educational materials alert parents that the school is a no-idling school, and thus bus engines and car engines should be turned off while vehicles are not in motion.

For optimal teaching and learning, Mason supports the health and wellness of their students and staff. Approximately 80 percent of the school's fresh produce comes from local farmers. Nutrition staff members visit classrooms to offer learning opportunities for students. Mason strives to foster a healthy physical environment by ensuring students spend one third of their elective class time dedicated to physical education. Through the Fitnessgram program, students are assessed annually for flexibility, strength, and endurance.

Mason environmental stewardship extends beyond the building and into the extensive outdoor learning areas, which have been funded through local grants.

Over 30 percent of Mason's grounds are devoted to outdoor learning areas, which include trails, pollinator gardens, vegetable gardens, and native plantings maintained by students. One hundred percent of Mason's landscaping is considered water-efficient and regionally appropriate. Plantings around the playgrounds are watered by stormwater, which is pumped from a retention pond on the school's property. Students engage in problem-based, real-world STEM learning that resulted, for example, in the design and installation of terraced steps leading to the outdoor classroom. The terraced steps provide not only easier access to the outdoor classroom, but also decreased erosion and stormwater runoff.

Mason incorporates environmental education in grades kindergarten through five that is aligned to Georgia's new, rigorous learning standards. Over 90 percent of students met or exceeded state standards in science. All teachers receive monthly staff development in project-based STEM learning as part of a state certification process. Examples of project-based learning include students designing solar ovens to cook s'mores while learning about alternative energy sources, acting as engineers to design and build water filtration systems, and analyzing idling data from the car rider line to offer recommendations that help reduce air pollution. Students also have designed and built birdhouses, researched native plants for the outdoor classroom, and created and sold necklaces from reused materials, with proceeds donated to Mason's cancer fundraiser, Relay for Life.

Mason developed several cutting-edge collaborative project-based STEM programs in 2014 by working with local high schools. High school students visited Mason to design musical instruments from reclaimed items. Physics students were able to connect their curriculum on sound and vibration to the elementary learning objectives. In another unique program, high school students from the mathematics, science, and technology school worked with Mason students to design and construct electric houses. These events were highlighted and presented to the community during Mason's annual STEM day. Guest speakers are recruited yearly to share with students their career experiences in the environmental field. Community experts, engineers, and high school robotics students also were on hand to help instruct and inspire students.

Mason's environmental efforts have been years in the making, and have required dedication and meaningful collaboration among teachers, students, parents, leaders, and community partners. They "walk the talk" through their project-based STEM program, extracurricular activities, and a commitment to operate the school to the highest of standards. It is in this way that they model environmental stewardship for their students to provide a sustainable community for future generations.

Big Shanty Intermediate School, Kennesaw, Ga.

Clean air, clean water, and hands-on learning

Big Shanty Intermediate School is the only third- through fifth- grade intermediate school in Cobb County, Ga. It serves 758 students, 44 percent of whom are eligible for free- or reduced-price lunch. The diverse population includes 15.4 percent students with disabilities. With 20 percent of its educators qualified for special education classes, Big Shanty houses the only special education unit for moderate intellectual disabilities and autism in Cobb County.

The green team consists of six teachers, two administrators, and one parent, all of whom assist the school in creating sustainable, healthy environments, and ensuring a high-quality environmental and outdoor education that will provide students with the 21st-century skills and sustainability concepts needed in the growing global economy. Last year, the team organized 624 community volunteers during the Comcast Cares campus clean-up. Big Shanty's green team has received recognition by the city of Kennesaw for helping to make their campus more inviting and environmentally sound. Comcast donated over $9,000 worth of clean-up supplies, along with an additional $12,000 towards school improvement. The volunteers were able to plant trees and gardens, maintain the existing landscape, and create lasting relationships within the community. The green team also leverages rich relationships with Cobb County Water, the Clean Air Campaign, Helping Hands of Atlanta, Captain Planet, Kennesaw State University Sustainability Committee, Keep Kennesaw Beautiful, Keep Cobb Beautiful, Lowes, the Eagle Scouts, and their very own PTA.

Big Shanty uses three rain barrels that capture and store rainwater draining from the roof. The 50-gallon barrels have a spigot for filling watering cans, and a connection for a soaker hose. The school uses approximately 20 gallons from each barrel per month. Students helped to create a V drain to divert sitting water to a nearby drainage area.

Big Shanty's outdoor learning centers grew from a humble beginning of three cedar garden boxes in 2007 to 12 purposeful garden areas, including a sensory garden that is specifically designed for special needs students, a memorial butterfly garden, fairy gardens, a salsa garden, and mosquito gardens.

The school participates in a farm-to-school program for local fresh food, and the school garden supplies food for students, for cooking and garden classes, and to the community. The school currently participates in the Kitchen Cart program, provided

by Captain Planet, through which students are able to harvest and prepare fruits and vegetables from the garden. Big Shanty also is purchasing a Vitamix blender to entice students to sample vegetables from the garden, in the form of healthy organic smoothies.

Big Shanty has promoted Clean Air Campaign no-idling programs through the Young Lungs at Work Cartoon Contest since 2009, and also uses flyers, signs, events, and in-school announcements to raise awareness of healthy air quality. The school has Clean Air Campaign promotional events, like Cocoa for Carpool, where staff and students have encouraged parents in the car line to warm up with hot cocoa while cooling off their engines. The Clean Air Bear has visited the school to chat with bus riders. Safe Routes to School are clearly defined in the front of the school with a crosswalk, and in the rear of the school building with a sidewalk.

Many environmental education professional development opportunities are available for teachers through Captain Planet, Cobb County Water System, Environmental Education Alliance, Project WET and Project WILD, and Zoo Atlanta.

The school has hosted multiple STEM-based events, including Sci-Con, during which students traveled room to room to engage in age appropriate STEM activities, like creating “junk-ropes” out of plastic grocery bags. During another event, Caine’s Arcade, students created unique and original arcade games from boxes and recycled items. Plans for National Green Week 2015 will include a different theme each day.

Students learn about soil by composting in their classrooms and in the school compost area, while also investigating beneficial insects, such as worms. They examine animal migration and its effect on Big Shanty, especially through the goose droppings on their playground. Students investigate erosion and its effects on campus by observing the same locations several times over the school year to discuss the cause of changes. Students investigate where drinking water comes from by visiting the on-campus stream. They assist their science teachers in measuring dissolved oxygen, temperature, and pH to measure the quality and health of their school’s water source. Students walk the campus and identify native species of plants and invasive plants, observing what is growing on, near, and beneath the plants. They also look for the same plants in their own yards and off campus in their study of native vegetation. Other investigations include earth-made air pollutants like volcanoes versus man-made air pollutants, microorganisms in the soil, chemical and physical changes in the leaves and soil, and discover cells in the plants they grow. Students inquire about alternative forms of energy, after their unit on electricity and magnetism.

Big Shanty is teaching students to become global citizens and thinkers, and that that one person can and will make a difference, even in simple ways; turning off the faucet while brushing teeth or the engine at car line, riding the bus, asking a question, or paying it forward with a service project.

Cherokee County School District, Georgia

Healthy choices today for a better tomorrow

In Cherokee County School District (CCSD) green is more than just a trend – it's a guiding principle across all operations. CCSD, located in metro Atlanta, is the ninth-largest school system in Georgia and currently serves more than 39,000 students, 31 percent of whom are eligible for free- and reduced-price lunch.

Attention to sustainability throughout CCSD has led not only to facilities and practices that are better for the health of students, staff, and natural resources, but that also are more energy efficient and economical, which benefits the financial health of the school district and the entire community. All CCSD facilities meet American Society of Heating, Refrigerating and Air-Conditioning Engineers standards, and use automated energy management facilities. All facilities have been retrofitted with energy-efficient and cost-effective lighting systems and low-flow bathroom fixtures.

Since 2004, new construction in CCSD has included prototype architectural designs with a focus on energy-efficiency, which not only reduce operational costs, but all design costs; long-lasting, low-maintenance construction materials including metal roof systems, concrete blocks, and bricks, which in addition to decreasing energy use also reduce maintenance practices that have an environmental impact; high-efficiency T-8 and T-5 fluorescent lighting and lighting controls for non-use times including occupancy sensors in appropriate areas; energy management controls throughout facilities; reflective metal roof systems; and computer shutdown system of utilities for after-hours.

A new feature for school construction beginning in 2014 has been the use of polished concrete flooring in high-traffic areas, which eliminates the need for additional vinyl flooring materials and frequent use of water and cleaning chemicals. New playground construction uses recycled rubber, which eliminates the need for irrigation and/or mulch replacement. This green focus for school grounds begins in the construction phase through a partnership with the Georgia Native Plant Society. The organization is invited to "rescue" plants from CCSD construction sites to be

replanted elsewhere; additionally, CCSD transplants trees and shrubs from its own construction sites to save these plants and reduce landscaping costs.

Every school participates in a recycling program designed to meet the needs of its students, staff, and community, and cardboard and other products are recycled districtwide. A new initiative underway at a growing number of CCSD schools is composting, with many schools setting up composting areas as part of their campus gardens and/or outdoor classrooms. Recycling and reuse partners for CCSD include local waste-management companies, Cure Recycling, Recycle Rally, Terracycle, PTA units, the Lions Club, the Cherokee County Animal Shelter, the Boy Scouts, and various local businesses. Recycling at the school level has increased in the past year through a partnership with the Cherokee County Chamber of Commerce's Going Green Initiative, which offers an annual Recycling Challenge. The school that collects the most newspapers to be recycled during the challenge time period wins gift cards for every student.

The district has been a Clean Air Campaign partner for four years and is committed to continuous implementation of practices to improve air quality. The campaign's Clean Air Schools programs are available to all CCSD schools and include programs to promote bus ridership, carpooling to school, and no-idling school zones. Through a 2011 grant from EPA, CCSD retrofitted all school buses purchased prior to 2007 with the latest exhaust-reduction devices including diesel oxidation catalyst mufflers. Further, 60 percent of school buses – 214 buses -- are equipped with diesel particulate filters. The district won a Georgia Department of Transportation Safe Routes to Schools grant to encourage walking or bicycling to school in order to reduce car and bus traffic, reduce emissions, and increase healthy exercise. The funds covered the installation in 2013 of crosswalks, sidewalks, and bike racks at several schools.

CCSD has a holistic view of its mission and understands that improved health and wellness leads to more successful students and staff. The district has been a strong participant in initiatives such as Fitnessgram and the Student Health and Physical Education (SHAPE) program, with 19 of CCSD's schools being named to the first Governor's SHAPE Honor Roll. Another major component of the district's health and wellness activity is accomplished through systemic partnership agreements with organizations that provide additional curriculum, events, and after-school programs, such as the YMCA and its Youth Fit for Life program; the American Heart Association, which conducts Jump Rope for Heart, Hoops for Heart, or Red Out programs at all schools; and new agreements with the U.S. Tennis Association and a local golf course that offers free curriculum and equipment for tennis and golf instruction in elementary school physical education classes. Individual school initiatives have included fitness, walking, and running clubs for students and staff, which are fast becoming very popular lunchtime and after-school activities; and the

establishment of nature walking trails at several campuses through fundraising and grants.

Unique programs undertaken by the school nutrition department include continued participation in farm to school programs' sharing tables and lunchtime music to reduce the amount of food that is left uneaten by the students, Grab and Go breakfasts to increase breakfast participation, and the Neighborhood Summer Feeding Program to provide students with free meals during the summer.

CCSD begins environmental and sustainability education for its students at the elementary school level, and these opportunities increase as students progress to higher grades. High-school students also frequently choose environmental subject areas for their capstone senior projects. Recent examples include an Etowah High School student who, with permission of appropriate state agencies, constructed an artificial reef off the coast of Florida, and an ACE Academy alternative high school student who made nature trail cleanup a focus of his project.

The expansion this school year of STEM academies at four of the district's elementary schools to additional grades after launching in 2012-13 is further increasing the focus on environmental topics, with units covering subjects such as energy and ecology. This school year also saw increased course offerings in green topics in all high schools, including AP Environmental Science at two additional campuses. Outdoor classrooms, gardens, and nature trails are popular at many of CCSD campuses as a way to increase environmental and sustainability education. Examples include weather stations and information signage for plants. A partnership with Georgia Power has led to science presentations throughout the school year at dozens of schools at no cost to CCSD. Individual schools also have developed ties to community organizations like the Cherokee County Water and Sewerage Authority, and Upper Etowah River Alliance, both of which offer free in-classroom education programs.

Environmental clubs and green clubs are offered districtwide. These clubs educate students and give them the opportunity to organize and participate in efforts such as: recycling projects, campus cleanup and beautification days, waterway clean-ups, school Earth Day celebrations, Adopt-A-Road and Adopt-A-Stream programs, and environmental improvement projects such as tree plantings. Garden clubs also are growing in numbers districtwide, with many clubs partnering with community organizations such as the Master Gardeners, County Extension Office, and Farm Bureau. This focus on environmental and sustainability education is evident in and out of the classroom is evident in the outstanding academic achievement by CCSD students on national and statewide assessments.

Cobb County School District, Georgia

Where tomorrow's future begins today

Cobb County School District (CCSD), located in the metro Atlanta area, is the second largest school system in the state, and 24th largest school system in the United States, with an enrollment of 111,751 students and 13,371 employees. CCSD is comprised of 112 schools and 14 support facilities, totaling 17,202,405 square feet of floor space and 3030 acres of land. District growth, rising utility costs, a heightened awareness of environmental health, and the need for safety of staff and students guided administration to research, test, and implement new technologies to provide the best possible learning environment while reducing environmental impact. Environmental strategies at the district level are implemented through individual departments and site-based school programs, resulting in the common goal of environmental responsibility.

The district created a maintenance department indoor environmental quality (IEQ) team to conduct periodic inspections of all facilities to locate and correct potential leaks created by burst water lines or sewage backups. The IEQ team also investigates school concerns related to odors and possible mold.

The district's Green Seal-certified custodial supplies program eliminated six traditional cleaning chemicals and replaced them with one chemical, Oxy Orange. This Green Seal-certified cleaner has reduced chemical exposure for custodians, teachers, and students. CCSD's installation of vinyl floor tile instead of carpeting during renovations and new construction has allowed for rapid and complete removal of dirt and dust during cleaning of floors. The IPM program provides pest control by eliminating habitat, food, and water sources while minimizing treatment applications.

During 2008, the district's utility budgets for electricity, water, and gas were exceeded. Since then, utility costs have been reduced by $6,359,526. New school construction is built to LEED standards with geothermal heating and cooling systems. Districtwide computer controlled systems provides HVAC shutdown after school hours, and all HVAC filters are replaced every nine weeks using high efficiency filters. Occupancy sensors and T-8 light bulbs installed at 41 schools have provided further reductions in energy usage.

Exterior LED security lighting at CCSD's maintenance shop has shown that LED technology meets lighting needs and reduces electrical cost and maintenance. Electric hand dryers in 90 percent of student restrooms provide a sanitary alternative

to paper towels and eliminate paper towel waste. The installation of low-flow flush valves on toilets and urinals, along with low-flow aerators on sinks, reduces water usage. A districtwide single stream recycling program has resulted in a substantial reduction in waste going to landfills.

The districtwide no-idling policy for the 1,168 school buses and 236 support vehicles has resulted in fewer daily exhaust emissions, while improving air quality. The installation of a GPS tracking system on all district vehicles has improved route efficiencies and reduced excessive idling. The retrofit of 108 school buses with particulate filters to reduce emissions was made possible by an EPA grant. CCSD also purchased 200 new buses equipped with low-emission diesel engines.

CCSD received 20 Fuel Up to Play 60 Grants, totaling $59,000. Six schools were named Fit Friendly Schools by the American Heart Association. Awards include a National Bronze Award from the Alliance for a Healthier Generation; two Golden Radish Awards for the district's support of Farm to School initiatives; and the USDA Food and Nutrition Services Best Practice Award.

Overall, Cobb schools strive to provide their students with a world-class educational experience while building skills needed to successfully participate and compete in a dynamic global workplace. As students are challenged by complex problems related to real-world scenarios, they research, design, build, discover, and collaborate while creating potential solutions.

Gardening programs are well established across the district at all levels. Most elementary school gardens are the result of a multi-year partnership with the Captain Planet Foundation, which has collaborated with schools to install more than 25 gardens across the district. Each school is able to tailor the design of the gardens to best align with the unique qualities of the school.

Cobb teachers have access to environmental education materials from a number of community partners. Keep Cobb Beautiful has provided teachers with free gardening workshops and grants annually. Cobb Water has offered ongoing Adopt a Stream, Project WET, Project WILD, and PLT training for teachers at all levels.

The district has had a very long and successful partnership with Cobb Parks and Recreation, consisting of a five-part educational field study series for students and teachers. Students complete three in-depth field studies at a park adjacent to their local school community. These field studies are interspersed with two classroom visits from Cobb Parks and Recreation naturalists. This unique partnership enables third- and fifth-grade students to receive sustained environmental education aligned to grade-level standards.

Learning Gardens, Environmental Clubs, Clean Air School, and the Cobb County water department's Green School Initiative provide a wide variety of resources for students and teachers to participate in making a difference in their schools, local community, and global community.

Illinois

River Trails Middle School, Mt. Prospect, Ill.

Fueling up to produce sustainability leaders

At River Trails Middle School (RTMS), with a student enrollment of 500, roughly 40 percent of whom are eligible for free and reduced-price lunch, sustainability begins with students' environmental literacy. An existing classroom has been transformed into a modern STEM lab where students control renewable energy and see their building's environmental impact in real time. The RTMS building is a living teaching tool: through a partnership with Trane Corporation, students examine the difference in energy consumption by comparing the energy usage of three kinds of lights: the latest LED technology, 25E T-8 bulbs with reflectors, and 32W T-8 bulbs. Data from a solar panel and a weather station is tied into the heating and air-conditioning system so that students can perform experiments on temperature, electricity, and energy use. The students make changes to set points and parameters in the classroom (such as CO2 and temperature levels), and watch the unit ventilators respond in real time via graphics on an LED screen.

Students mock up miniature houses out of popsicle sticks and paper for thermodynamic experiments. Thermal imaging indicates where heat is being lost and how to use different insulating materials to find the best solution to minimize loss. Students learn about wind energy and blade design by creating their own wind turbine blades with a 3D printer. They factor the length, width, pitch, and number of blades in order to create a turbine that generates the most energy. Using a kilowatt reader, they measure the amount of energy necessary to run a small desk lamp to determine which turbine blade design produces the most energy. Social studies classes explore how government and business policies affect the environment through the course of history. For example, classes look at how, after the Civil War, land that had been conserved by Native American tribes for thousands of years quickly degenerated; and how, as early as the 1870s, oil businesses were harming the environment, unbeknownst to them, with gasoline leaks into the ground and water.

Health is a way of life for RTMS students, who run more than two miles a week. After school, students participate in intramural and competitive athletics, or work out on treadmills and ellipticals in the fitness room. Named the Illinois Grand Prize

winner by Fuel Up to Play 60 in the For Love of Play contest, which empowers students to make small, everyday changes to get healthy and physically fit by choosing healthy foods and getting active for at least 60 minutes every day, RTMS students celebrate their achievements on the Fuel Up to Play 60 website. Students rotate through 14 fitness or nutrition stations including: yoga, a rhythm movement activity, nutrition demonstration, and science experiments on sugars found in food.

A national pilot program with Northwestern University brings college athletes on monthly visits to RTMS to promote fitness, sports, and athletic leadership. Healthy and fun choices at lunch include local produce, a large selection of fruits and vegetables, a salad bar, and -- through Fuel Up to Play 60 grant money -- induction burners, steamers, and a carving station. Special tastings introduce students to vegetables like bok choy. Eighth grade culminates with a 10-mile bike trip to Lake Arlington for kayaking, biking, volleyball, and softball. As part of the Family Literacy Program, English-language learning parents and children practice language skills through a variety of healthy living classes that involve composting, growing cold weather vegetables, starting seedlings indoors, and sharing cooking experiences.

Air quality at RTMS is maintained with operable windows in every classroom, Green Seal cleaning products, computer-controlled CO2 monitoring, and clean biodiesel and electric buses. RTMS has earned the Gold certification for green cleaning from the Schools of Illinois Purchasing Cooperative for three consecutive years. Recent upgrades to unit ventilators added variable speed motors, single zone variable volume control, and CO2 sensors for demand control ventilation. Exhaust and ceiling fans improve air quality in the gym without air-conditioning.

The very active student recycling club's efforts are woven throughout the school. Students research a product's lifecycle from natural resources to the landfill, exploring biodegradable properties, recycling, and reusing. Chromebooks and Google Apps for Education allow students to turn in papers without printing. Online purchase orders, paychecks, board meetings, print centers, and monitoring software further reduce printing. Timers turn off carts when charging is complete. All classrooms have high-efficiency T-8 lights and occupancy sensors. Washrooms have low-flow automatic flush toilets and automatic washbasins. For bus transportation, the district partners with Grand Prairie Transit for their commitment to using cleaner, alternative fuels. Their hybrid bus design is the first hybrid school bus in Illinois, and their use of biodiesel fuel reduces the harmful toxic fumes emitted by diesel engines by over 30 percent. One bus was transformed into a Clean Air Bus Classroom to educate students about environmental impact. As a result of resource conservation initiatives, RTMS was recognized with EPA ENERGY STAR certification in 2014.

RTMS reaches out to involve the community in green efforts. RTMS' communitywide Green Schools Committee was launched with participation by the park district, chamber of commerce, village library, elected officials, parents, students, teachers, administrators, and school board. A variety of events have helped engage the community and sustain momentum. Using funds donated by local businesses, volunteers from Kraft Foods, along with the local Boy Scouts, built a community garden on campus where families in the nearby apartments grow their own fresh produce. With the help of a grant from the local water authority, the school built a rain barrel irrigation system, along with a stormwater diversion system, to water the garden.

River Trails is a PLT Green School participant. The middle school celebrates USGBC Green Apple Day of Service annually, a day when advocates, including students, teachers, parents, and elected officials, come together in support of healthy, sustainable schools by taking action in their communities with a range of projects. The school held a Tune Up and Pedal day in 2012 to encourage riding bikes to school; grew a community garden in 2013; and in 2014, created an outdoor classroom in an unused courtyard.

During Green Apple Day of Service 2015, students will be working hands-on with architects and engineers to design a new front entrance for the school. Green technologies will be a major consideration as they work on this design. River Trails knows that a green society starts with this generation of lifelong learners and student leaders!

Indiana

Columbus North High School, Columbus, Ind.

Building, selling, and sharing to benefit the community

Columbus North High School (CNHS), serving 2,023 students --32 percent of whom are eligible for free and reduced-price lunch, and 12 percent of whom are limited English proficient -- has a tradition of excellence that has focused on meeting and exceeding the needs of the community. Students are required to complete a senior service project to the community as a final step toward graduation. Each year, many of these projects focus on improving the physical environment of the school, and include recycling and energy reduction efforts. Public service announcements are made during lunch and at sporting events encouraging students and spectators to place their recyclable in the receptacles provided.

During the most recent renovation, a state-of-the-art HVAC system was installed at CNHS, including energy-efficient boilers, chillers, and pumps, all with a digital control

system that allows the school to monitor the environmental conditions throughout the building. Each classroom has occupancy sensors that turn lights off when the room is vacated for 15 minutes. Lighting in common spaces is controlled by a Lutron Quantum system, and operates according to a programmed time schedule. Access to natural lighting, which was paramount in the design of the newly constructed spaces, allows for significant daylight harvesting. Lighting systems have been retrofitted with efficient T-8 and T-5 bulbs. The high school gymnasium, which has had LED lights with dimming and occupancy sensors installed, has reduced energy consumption by 75 percent. While the renovation increased the size of the facility by 25 percent, the school still managed to cut GHG emissions by 6.5 percent, and reduced its energy use by 30 percent. The renovations are LEED Silver Certified, and the school received ENERGY STAR certification in 2014 with a score of 86.

One major aim of the renovation was to improve parking for students and staff. Increasing the size of the parking lots meant that green spaces would be lost to asphalt. To reduce the environmental impact of this loss of green space, drywells, an interior rain garden that includes a student-planted vegetable garden, and pervious concrete were installed to allow as much water as possible to naturally percolate into the soil. The campus vegetation focuses heavily on native plants that require no watering, and the campus boasts an array of trees native to Indiana.

Many curricular components at CNHS are designed to connect students to a healthy lifestyle, encourage them to become environmentally literate, and actively engage them in the community. Courses on health, physical education, and fitness are required or elective. In addition, AP Environmental Science, Introduction to Agriculture Food and Natural Resources, Plant and Soil Science, Project Lead the Way: Civil Engineering and Architecture, Nutrition and Wellness, Sports Nutrition and Wellness, and Advanced Life Science: Foods allow students to pursue in-depth study of their relationship to the environment and healthy lifestyles. Other classes teach architecture, construction technology, and engineering, including details of LEED certification and how it relates to global sustainability. Construction Trades students build and sell a home every year for the past 20 years. As a part of this class, instructors have a board of directors that help manage the finances and market the home. In 2014, the Construction Trades class built two full-size baseball diamonds, learning about wastewater management.

Students are encouraged to identify senior projects that match passions or interests, demonstrate breadth in learning, and connect to the community. Projects highlight critical thinking and problem solving skills, and encourage understanding of the relevance of student's studies at CNHS. Projects in 2014 included coordinating a clean-up of a burned out house, hosting gardening sessions for families at low-income housing, cleaning up and re-mulching the Columbus Dog Park, hosting a

bike ride at Mill Race to benefit diabetes research, and building bird houses for endangered birds at Grouse Ridge Lake.

Student and staff, health, safety, and wellness are driving forces in the school system. Through participation and collaboration with vital community resources such as Safe Routes to School, a farm to school partnership, and a Smart Snacks in Schools program, CNHS provides for the safety of students and staff, and encourages them to pursue healthy lifestyles. The Healthy Communities program supports the school as an advocate and partner on health initiatives like tobacco, healthy lifestyles, and a domestic violence/safe dates program. CNHS uses 80 percent green cleaning products, as well as IPM practices.

Iowa

Kirkwood Community College, Cedar Rapids, Iowa

A green wind turbine blowing through all campus activities

Kirkwood Community College, enrolling over 15,000 students, is a leader in sustainability initiatives for higher education. Most notably, its commercial scale wind turbine has become an icon of the college's approach to going green. The turbine provides an estimated 5.6 million kW/h of clean renewable electricity to campus, and serves as an educational tool to both Kirkwood students and the community. The school's energy production and distribution technologies program teaches students about complex mechanical and electrical systems, including megawatt windmills, steam-driven turbines, and solar fields that turn sunlight into electricity. Students assemble, disassemble, and troubleshoot parts and systems of the 2.5-megawatt wind turbine, gaining valuable hands-on experience.

Kirkwood's energy policy originally was adopted in 2007. The policy addresses energy use and conservation in a variety of ways. Using indoor climate control, universal temperature presets are 68 degrees in the winter. A software-based system controls equipment and lighting, allowing the college to save energy during periods of high demand by shutting down HVAC for ten-minute intervals. New construction and renovations are designed and built to minimize energy use. Kirkwood currently has 710,000 square feet of geothermal systems, with an additional 100,000 under construction. These systems use the constant temperature of the earth to moderate building temperatures. The Hotel at Kirkwood, the nation's only luxury teaching hotel at a two-year college, makes use of an ice storage system that reduces energy usage when cooling.

In 2012, Kirkwood was recognized with the Iowa Governor's Environmental Excellence Award for overall achievement and given special recognition in waste

reduction. Also in 2012, the Iowa Recycling Association presented Kirkwood with the Best School/Organizational Recycling Program award. Through its commingled recycling and other waste minimization programs, Kirkwood is committed to steadily improving its recycling rates, and has adopted a goal of achieving 75 percent landfill diversion by 2014. As a result, food scraps from the hotel, the culinary arts program, and the cafeteria are composted, and textbooks are collected to be shredded and recycled as products such as paper towels and napkins.

The college has reduced the use of salt to treat ice on campus by using snow brooms and organic compounds such as beet juice for walkway and stairway maintenance. In addition to the environmental benefits of minimizing salt use, mixing the organic compounds with the salt results in a material that is effective in much colder temperatures, and reduces the amount of material needed per unit area treated. Kirkwood has been awarded Green Cleaning Gold status, and is green cleaning certified.

Students studying agriculture learn herbicide, chemical management, and manure management. Sustainable construction science provides an understanding of building science theory and applications in residential and commercial construction. Soil conservation concepts are covered in applicable areas with Department of Agriculture materials. An entire class session in the Introduction to Ethics course is devoted to the concept of environmental ethics. Through Kirkwood's horticulture program, the college has developed berms and reestablished native prairies. Landscape construction and design courses address trends in sustainability and landscape maintenance. Diesel fuel systems courses teach students about emissions control and how the emissions-heavy industry is switching to new clean technology.

Some food produced onsite is used in dishes at the Class Act Restaurant at the hotel, in the culinary arts program, and in the cafeteria. The Michael J. Gould Recreation Center features three full-size basketball courts and a 200-meter walking and jogging track; all students, employees, and retirees are invited to use the center for free. A variety of fitness classes are offered daily to students and employees. Kirkwood provides a variety of counseling services including online screening, personal counseling, educational counseling, and career counseling. Kirkwood is a certified Blue Zone worksite, which is a program to enhance a person's life as well as the life of their community. Many residents living in Blue Zone areas share nine healthy lifestyle habits that help them live longer, healthier, happier lives.

Kentucky

Bryan Station Middle School, Lexington, Ky.

Energy-saver awardee with a strong sustainability curriculum

In the last 10 years, Bryan Station Middle School (BSMS) has reduced energy consumption by 40 percent and water consumption by 29 percent. BSMS has received district awards from Fayette County Public Schools (FCPS), including the FCPS Most Efficient Award (2011, 2012, 2013) and the FCPS Super Saver Award. The FCPS Most Efficient Award recognizes schools with the lowest energy utilization index, which means they used the least amount of energy per square foot of the building. The FCPS Super Saver Award recognizes schools that reduced energy consumption the most compared to the prior year. BSMS has received EPA's ENERGY STAR Award (2012, 2014) and has reached the Gold level with the Education Leads to Understanding Sustainability, Energy and the Environment Program (E=USE2). E=USE2 teaches students the three pillars of sustainability, types of energy sources, and explores global climate change causes and implications. BSMS also is a participant in Kentucky NEED, and a candidate for Kentucky Green and Healthy Schools.

BSMS conducts interviews and audits in conjunction with Kentucky Green and Healthy Schools. This partnership helps BSMS implement projects with fidelity by measuring pre- and post-data through a well-documented plan to ensure projects are meeting expectations.

The school's Deaf and hard of hearing program and eighth-grade students collaborated to design an outdoor rain-garden and outdoor classroom. The eighth-grade Spanish immersion students complete recycling weekly and conduct recycling audits throughout the year. They also work with Fayette Recycling to create public service announcements about recycling. In partnership with Bluegrass Greensource, a guest speaker visited eighth-grade students to discuss green jobs.

The seventh-grade science program collaborates with the district to conduct energy audits while looking at alternative ways to incorporate and encourage energy saving habits throughout the school building. The seventh-grade students take responsibility for the school's participation in E=USE2. In this districtwide sustainability program, students are taught the three pillars of sustainability (economy, environment, social), renewable versus nonrenewable energy sources, and global climate change causes and implications. This program encourages students to collect data about the energy used in the building, and analyze the data to find solutions or energy conservation techniques that can be applied by the host school.

The sixth-grade science program has worked closely with FoodChain, an urban farm, to create an aquaponics program. The Green Club implements a no-idling initiative to reduce outdoor emissions, improving the air quality inside and outside the school building. The Green Club also assists with the food garden.

Health and wellness remain a priority at BSMS, which has adopted an IPM plan to reduce or eliminate pesticides consisting of good housekeeping techniques, clutter reduction, and preventive maintenance. BSMS prohibits students from entering a treated area for at least eight hours after the treatment, or longer if required by the pesticide label.

BSMS has a comprehensive IAQ management program that is consistent with EPA's IAQTfS. CO2 levels are regularly monitored, carpet has been removed, common asthma triggers are monitored and mitigated, every classroom is audited annually for potential air quality hazards, and HVAC air filters are monitored, maintained, and changed regularly.

All students participate in a year-round wellness class, which improves fitness levels. Nutrition is emphasized in lesson plans to bring awareness of the importance of nutrition in our daily lives. Students are enrolled in a daily 45-minute wellness session that focuses on health and physical education. Outdoor lessons are planned when the weather permits.

The school is an active partner in Fayette County Farm to School, through which students learn about the environmental, economic, and human physical benefits of local food, while conducting local food taste tests and meeting local producers.

Science lessons are integrated with the Next Generation Science Standards, which discusses sustainability. Bluegrass Greensource visits classrooms and works closely with the science department to implement different lessons and activities that promote STEM and green technologies. The science department requires sixth- through eighth-graders to produce science projects that incorporate an environmental or sustainability component. All students participating in STEM activities take pre- and post-assessments to measure prior knowledge of renewable energy sources and modern environmental issues. In STEM labs, students research various careers and technologies to find solutions to real-world environmental problems.

Royal Spring Middle School, Georgetown, Ky.

Paying tribute to the past; looking toward the careers of the future

The environment, student and staff health, and awareness of sustainability are embedded throughout the curriculum and daily practices of Royal Spring Middle School (RSMS). RSMS pays tribute to the source of pure water used by settlers to this region more than 200 years ago.

The initial design and construction of RSMS in 2006 incorporated green construction practices such as geothermal heating and cooling. In response to the news that Scott County was to build a second high school, students brainstormed sustainability designs for the new facility, including those with solar power and low-flush toilet features.

RSMS boasts an active Energy and Environment Club, affectionately known as the Green Team. This club allows many conservation and sustainability efforts to be student-led, such as the schoolwide recycling program and tree-planting projects. The Green Team also hosts an Energy Carnival each April during Earth Week, which is open to the entire Georgetown/Scott County community. The Green Team also participates in the Power Police, a school club that patrols the school hallways looking for ways to reduce energy consumption. Energy consumption has been reduced 30.6 percent from 2009 to 2013, and water consumption has been cut by 13 percent. Landfill waste has been curtailed by an active, student-led recycling program over six years. Every student, faculty member, and staff person contributes to this effort on a daily basis through intentional practices. The recycling dumpster is filled each week, which reduces the amount of waste going into the landfill.

Using materials provided by National Energy Education Development (NEED), students conducted an energy audit of the entire school, which revealed many ways RSMS could save energy. Working with custodial staff and faculty, students were able to put their suggestions into action, allowing RSMS to reap energy savings on a daily basis.

RSMS has received five EPA ENERGY STAR Awards (2009, 2011—2014) with a score of 94 in Portfolio Manager. The school also has received awards from BW Thornton (2007) and Burney Jenkins (2012), along with the Scott County Environmental Educator Award (from Scott County Soil and Water Conservation District).

PathoSans cleaning system recently was installed, which uses only water for cleaning. The water is circulated through a charging agent that allows the water alone to be an effective cleaning agent. This system is reducing the amount of chemicals introduced into the school environment.

Sixth-grade students participate in monthly mental health education meetings held by the school counselor. Many other programs of the counseling office are designed to promote self-esteem and general positive mental health. All grades participate in the Disability Awareness Walk sponsored by Disability Awareness Club.

A schoolwide "Word-of-the-Day" program often features environmental words. Daily Literacy Strands exercises include readings related to renewable energy sources, the water cycle, and ways to reduce, reuse, and recycle. In April, during Earth Week, all five days of Literacy Strands are environmental and sustainability themed. In response, students choose a side in the debate presented and write a persuasive essay.

The eastern edge of RSMS is bordered by Dry Run Creek, which covers approximately 25 percent of the RSMS campus. This riparian ecosystem is maintained in a natural state, and is used extensively by science classes for ecological studies. Students use Dry Run Creek to conduct in-depth water-quality analysis. Using reagent tests, students measure the nitrates, phosphates, dissolved oxygen, pH, turbidity, and presence of coliform bacteria. Students look at a map of the Dry Run watershed to identify potential sources of point-source and nonpoint-source contamination: industrial, household, and agricultural.

Kentucky Division of Fish and Wildlife Management is a partner through Conservation Officer Gary Rogers, who gives a monthly one-hour presentation to the entire sixth grade. Another innovative community partnership the sixth grade enjoys is the annual Conservation Day, sponsored by the Scott County Conservation District Office. Scientists set up a series of stations for students to visit in rotation, providing hands-on, real-world experience with conservation experts.

Students problem-solve how sustainable farming practices and engineering methods could be used to design systems that would prevent agricultural runoff contamination, household sewage containment and waste treatment. Students also maintain the RSMS pond and practice their math skills by measuring organic pond cleaner.

RSMS intentionally focuses on college and career readiness in a College and Career Technology class. Throughout the class students are provided with opportunities to research and write about science and technology careers they might be interested in pursuing. The Gateway to Technology (GTT) class is a window of

opportunity for students to explore numerous engineering and technology-related careers, including green technologies and careers. In GTT, students use math, science, computer modeling software, and engineering thinking skills to model and test wind turbine blades in a real-world environment. GTT students calculate their family's ecological footprint and work toward reductions, and also complete a self-selected sustainability research project with accompanying presentation.

Western Kentucky University, Bowling Green, Ky.

Passion and vision inspire a climate-ready campus

Western Kentucky University (WKU) is a comprehensive, four-year university with the vision of being a leading American university with international reach. As part of its mission, WKU strives to create an atmosphere that supports engagement and creativity, and encourages faculty, staff, and students to be effective stewards of local and global environmental resources. At WKU, being green is about developing the passion and vision of its campus community, and striving to be innovative and outcome-driven.

WKU strives to reduce environmental impact, improve campus wellness, and provide first-rate environmental and sustainability education for Kentuckians, as well as for international and distance-learning students. These goals go hand-in-hand with reducing college costs, increasing completion rates, and ensuring that graduates find degree-related employment.

The entire campus – including university operations and services – intentionally supports strong environmental practices. For instance, in 2008, the school created an Office of Sustainability and hired a sustainability coordinator. The office itself, housed in a 1930s residence, doubles as a sustainable demonstration home, offering the community well-researched, practical solutions to improve the performance of the average household. In 2014, a photovoltaic array was installed to make the house the first net-zero electricity office on campus. WKU also has created a Green Fund, a dedicated fundraising channel for major sustainability initiatives that aim to reduce college costs, increase student retention and employability after graduation, and foster civic and community skills.

Since 2009, with the adoption of a comprehensive and aggressive University Energy Policy, WKU has reduced energy use by 25 percent through conservation and efficiency projects. These operational efforts, combined with a successful energy savings performance contract in partnership with Johnson Controls, Inc., include $9,700,000 in energy-reducing and facility improvements. Thirty-eight existing

buildings have undergone water and lighting improvements, encompassing 3.5 million square feet. Savings from these improvements have eliminated utility budget increases for seven consecutive years, and are reinvested in new energy-efficient and conservation efforts.

In 2014, 15 tons of food waste were composted from the dining halls. WKU has been an Arbor Foundation Tree Campus USA since 2010, and in 2014 the main campus became a certified arboretum. Six years ago, the university committed to build to LEED standards, and now has three Silver LEED-certified buildings, two more buildings pending certification, and no fewer than seven LEED professionals on staff. WKU also has been included in the Princeton Review's Guide to Green Colleges every year since 2009, and in 2014 earned AASHE's Silver STARS ranking. The campus has been named a Bicycle Friendly University by the American League of Bicyclists.

Similarly, the school's wellness program has evolved into a highly-visible, proactive model, encompassing healthy practices with regard to food choices, mental health, exercise, and preventive care – all promoting a more active, aware, and motivated community that is dedicated to sustainable living. In 2013, WKU launched a comprehensive wellness program for all benefits-eligible faculty and staff. In July 2014, the National Safety Council accredited WKU as a Safe Community – the nation's fourth university, and 25th community, to receive this accreditation. Because health and wellness issues are among the most common barriers to student success, WKU Health Services provides comprehensive health education and promotional programing, engaging students with participation incentives through the WKU WellU program.

Thanks to efforts by students and faculty, WKU has been designated as a National Weather Service/NOAA Certified Storm Ready Campus, prepared to protect the community in the event of severe storm threats. The university also aims to become a Climate Ready Campus, with the resilience to withstand climate change and implement adaptation strategies in a sustainable way. This new initiative is a cooperative effort between multiple departments on campus, external partners, and the community.

WKU is a leader in STEM education. It is home to Newsweek's top-ranking high school in America, the Gatton Academy of Science and Mathematics. Gatton students live and learn in a college setting while earning their high school diploma, and focusing on research and engagement in STEM disciplines. Site-based STEM initiatives feature the campus as a living laboratory, and a wide range of certificate, undergraduate, and graduate degree programs address the scientific, social, economic, personal, and political aspects of environmental change and sustainability. This approach offers the disciplinary depth and the interdisciplinary

perspectives that enable students to pursue meaningful careers and accelerate positive change in their communities. WKU offers over a dozen degrees focused on the environment or sustainability, from bachelor of science degrees in geography and environmental studies, to the nation's only master's degree that integrates social justice, community studies, and environmental sustainability.

WKU also strives to pioneer environmental initiatives that have local, state, national, and international reach. For example, WKU's energy policy has been adapted and adopted by the City of Bowling Green, Ky. The WKU Conservation Vacation, an initiative introduced in 2009 to save energy over the winter break, has resulted in overall savings of more than 3,000,000 kW/h of energy, which equates to cost savings of approximately $264,000 and mitigation of 2,191 metric tons of GHG emissions. The university's international programs, like the Semester at Sea and Climate Change Challenge study abroad trips, integrate sustainable service learning and interdisciplinary environmental research experiences for students.

As an institution, WKU aims to be an exemplary environmental practitioner, educator, and leader. As a campus community, WKU's faculty, staff and students are united in their efforts to increase strong environmental stewardship, advocacy, and engagement.

Maryland

J. C. Parks Elementary School, Indian Head, Md.

Students create much more than a park for outdoor learning

Nestled in rural Indian Head, Md. is J. C. Parks Elementary School, a vibrant and environmentally engaged school where students ask the challenging questions and drive environmental projects and initiatives with support from teachers and staff.

Serving roughly 43 percent free and reduced-price lunch eligible students, Parks jump-started its sustainability efforts with the installation of an outdoor classroom and transformation of school grounds. Students assisted with the restoration of school grounds into a thriving self-sustaining wetland, which included planting 4,000 wetland plants, 500 native trees and shrubs, and establishing rain gardens and meadows. The outdoor environment is now an interactive learning space for physical education classes, lessons on seeds and frogs, and exploration of weather and plant cycles. Bay-Wise Master Gardeners have helped to establish a Junior Wildlife Gardener program, which allows students to team up and design planting areas and gardens. It even attracted the attention of then-Governor Martin O'Malley, who visited the school wetlands, interacting with children and commending Parks for its commitment to connecting students to the outdoors.

Watershed education is important at Parks. The fifth grade has a meaningful watershed educational experience at Nanjemoy Creek Environmental Education Center every year and the school celebrates annual Wetlands Day in May. Students hatch, raise, and release perch, shad, and horseshoe crab, and conduct water quality testing. Parks offers Science Museum, a five-week, schoolwide inquiry-based investigation of the school watershed that is infused with authentic STEM experiences. Throughout the project, students interact with the community, and, at the conclusion, display their findings at a final celebration with other grade levels and community members.

Parks has reduced its environmental impact by continually managing water and energy usage and waste production. Parks incorporates native plants and permeable pavers in its landscape, participates in recycling and composting programs, conducts energy audits, and is exploring renewable energy. Students have contributed by hanging signs over sinks to encourage reduction of water usage, starting Trash-Free Fridays, and creating posters to educate students and staff about the four Rs.

Student health is key at Parks. Students are learning outdoors routinely, and initiatives such as Mustang Marathon and the weekend backpack nutrition program keep students active and encourage healthy nutrition. Air fresheners, cleaners, and fragrant sanitizers all have been eliminated to prevent asthma triggers. Parks has switched to Green Seal and EcoLogo certified cleaning supplies implemented an idle-free zone policy. On Wellness Wednesdays, students learn health tips during the school's morning announcements. Outdoor activities for students include Jump Rope for Heart, a monthly schoolwide walk, and FitnessGram. EPA's Sunwise Program is used with grades three, four, and five each June.

Parks' accomplishments have not gone unnoticed. The school has received the NWF's Eco-Schools USA Green Flag Award, is certified by the Maryland Association for Environmental and Outdoor Education and Bay-Wise, and has received grants from NOAA Climate, Lowe's, Chesapeake Bay Trust, and the Governor's Schoolshed Initiative for work in environmental education and restoration. Additionally, Chesapeake Bay Trust named a Parks school teacher Environmental

Northwest High School, Germantown, Md.

Recognized state- and nationwide for leading in environmental education

Northwest High School (NWHS) is the model high school for sustainability in the Montgomery County Public Schools District (MCPS), a 2013 ED-GRS District Sustainability Awardee. At this school of 2,100 students, an Ecology Club and Environmental Science classes help to leading for all the school's students and staff.

Energy use behavioral change efforts have helped to reduce NWHS' GHG emissions and energy usage by nearly 18 percent per student and 21 percent per square foot over the past 12 years. This was accomplished in part due to the school's purchase of renewable wind energy (32 percent) and through school practices, such as placing reminder stickers on all light switches to turn off unneeded lights. NWHS diverts 25 percent of its waste through initiatives such as strategically placed recycling and solid waste collection bins and custom-created signage and visuals. The school also collects plastic bags and sponsors a prom dress donation drive. Paperboard food trays were implemented by NWHS, and students are encouraged to print double-sided and use digital drives to reduce the need for printing. Ninety percent of all paper stock is 30 percent post-consumer waste, and all final exams are printed exclusively on 30 percent post-consumer waste paper. Traffic patterns around the school are monitored and bus routes are reviewed annually to ensure safe transportation for students and for the planning of efficient routes to reduce the number of buses.

Student health is taken under deep consideration by NWHS. Seventy-five percent of the school's cleaning supplies are Green Seal certified, and the school uses the Green Seal-42 cleaning standard. No-idling zones are enforced on all vehicles, loading, and unloading takes place at least 25 feet from the school building and away from air intakes, doors, and windows, and the school participates in Safe Routes to School. Smoking and mercury have been banned from school grounds, and frequent tests are conducted for radon, carbon-monoxide, and lead. NWHS also is a USDA Team Nutrition School, where nutrition education is conducted in the classroom, through physical education, and in the cafeteria, using the My Plate program and local health curriculum. One hundred percent of grain products are whole-grain, all milk is fat-free or one percent fat, and trans fats and sodium have been reduced or removed. Students learn about where their food comes from and how it is produced in order to encourage a healthy diet, and vending machines are on timers to reduce snacking between meals and conserve energy.

NWHS encourages the use of outdoor facilities for study and recreation. The school's courtyard is landscaped to encourage outdoor lunch, a memory garden is maintained on campus, and the school offers athletic curriculum-based use of tennis courts, ball fields, and basketball courts.

NWHS students are active in their school's green clubs, including the MCPS Energy and Recycling Team Program (SERT) and the ecology club. The ecology club meets weekly to promote wise energy usage and recycling in the school, and often writes announcements for students on Jaguar TV, including recycling skits. The ecology club also grows herbs and vegetables in the greenhouse that are sold and sometimes gifted to the community. Native planting and growth cycles are also observed in the school's greenhouse and landscaping. NWHS offers environmental science, both AP and regular, Environmental Chemistry, Personal Enhancement and Nutritional Analysis, and AP Human Geography.

NWHS has been recognized in the state for its commitments to environmental education, health, and sustainability. It is Maryland Association for Environmental and Outdoor Education certified, a recipient of NWF's Eco-Schools USA Green Flag Award, and has been recognized by for environmental contributions by the district's SERT. The school received a SERT Flash for an art collage created by students that was made of recycled materials and illustrates the word recycling in six languages.

Howard County Public School System, Maryland

Raising the bar on school construction and environmental literacy

The Howard County Public School System (HCPSS), based in Ellicott City, Md., has long prioritized environmental sustainability, holistic environmental education, and STEM education opportunities for all students, along with promising environmentally-focused programs and practices. This district of over 50,000 students, divided among 41 elementary, 20 middle, and 12 high schools, continues to redefine success not just as high test scores, but also as high levels of achievement, engagement, and overall wellness. It is home to 2012 ED-GRS awardee Dunloggin Middle School.

HCPSS began a five-year strategic plan in 2012 that incorporates green initiatives and benefits four target audiences: (1) students, through career exploration opportunities, (2) staff, through the Commit to be Fit employee wellness program, (3) the larger community, through joint-use of HCPSS facilities, and (4) the district's

facilities-related departments, which have helped save the school system $2,600,000, redirecting existing resources to mission-critical initiatives.

HCPSS prides itself on community partnerships that help make its health and green initiatives a success. Through partnerships with groups such as the Howard County Conservancy, the Howard County Department of Recreation and Parks Office of Environmental Education, Howard County General Hospital, MOM's Organic Market, and Robinson Nature Center, HCPSS is able to progress toward becoming a greener and healthier place to learn.

HCPSS schools implement programs such as the Our Environment in Our Hands program, during which all Title I schools 4th graders go to Howard County fairgrounds to explore stream health, erosion, native wildlife. BioBlitz has allowed more than 500 students to learn about local biodiversity as they observe wildlife and plants along 85 acres of land. Students build outdoor classrooms, rain gardens, form green teams, raise monarch butterflies, and grow milkweed in their classes. The district has received environmental education grants from Chesapeake Bay Foundation, Maryland Environmental Literacy, and Johns Hopkins University. Environmental literacy is often incorporated into service learning projects.

Forty-eight HCPSS schools are certified by the Maryland green schools program. Schools participate in the USGBC's Green Apple Day of Service, the National School Lunch Program, the Explore and Restore Your SchoolShed Program, the Maryland Environmental Literacy Partnership, the Partnership for Children in Nature, and Healthy Howard, Inc.

HPCSS facilities are issued environmental report cards by students who tour the schools indoor and outdoor to assess factors such as biodiversity, vegetation, erosion, energy usage, transportation, and waste management. These student-led audits are an important part of HPCSS' efforts to reduce environmental impact and costs. Students celebrate Trash-Free Tuesdays and serve as Recycling Rangers. Various HPCSS schools have reduced energy usage by consolidating landscaping duties, installing switch timers, adopting usage of energy-saving light bulbs, using geothermal heating and cooling, HVAC improvements, and switching from fuel to natural gas boilers (a cleaner fossil fuel).

Maryland now requires a minimum of LEED Silver for all new construction; HCPSS has policy of LEED for systemic renovations as well and is building a new construction designed to be the first net zero school building in the state. HCPSS has achieved LEED certification for six buildings, and a systemwide reduction of $5,900,000 in actual gas and electric costs from 2010 to 2013. GHG emissions have been further reduced by efforts such as new transportation standards that limit bus idling; bus route reviews for efficiency; exhaust gas recirculating on buses; and

encouraging carpooling, walking, and bike-riding to school. Water consumption is reduced through low-flow fixtures and toilets, and sensor faucets and school sites are selected based on stormwater management capabilities.

Student and faculty health is of utmost importance to HCPSS. The district has won a Green Cleaning Award from American School and University, and implements Green Seal cleaning standards, along with IPM. In addition, monitoring building moisture, airborne containments, and ventilation systems ensure students and faculty are breathing clean air and are reducing asthma triggers. Proper nutrition and strict food preparation standards also keep students healthy and ready to learn. Schools celebrate walk to school days and collaborate with University of Maryland Master Gardeners. All schools have at some point won at least a HealthierUS Schools Challenge Bronze level, and the district sponsors a Top Chef competition. Schools offer brain breaks, Fitnessgram, and Girls on the Run. HCPSS has received recognition from the National School Nutrition Association, Yale Rudd Center for Food Policy and Obesity Recognition, and USDA Best Practice Awards.

Massachusetts

Blackstone Valley Regional Vocational Technical High School, Upton, Mass.

Career education with a view toward sustainability careers

Blackstone Valley Regional Vocational Technical High School (BVT) is a Title I school, serving 37 percent free and reduced-price lunch eligible students, focused on integrating health and environmental concepts into the general curriculum and school culture. With a facility constructed in 1965, and renovations in 1985, 2006, and 2012, it meets the Massachusetts Building Authority's Green School Building Program Requirements. Blackstone has increased community environmental awareness by actively promoting resource conservation measures and showcasing renewable energy innovations throughout the state.

The campus boasts energy-efficient features such as solar arrays, light tubes, displacement ventilation, high-efficiency lighting, and occupancy and daylight sensors. Blackstone also purchases 20 percent clean wind energy. These features are woven into projects and lessons. Solar, biomass, biofuel, and geothermal technologies have been added to the curriculum, along with conservation calculations and themes. Green technology and sustainability is a theme in all 17 of the school's vocational technical shops, from HVAC students who, under teacher supervision, maintain and upgrade the high-efficiency, high-end heating and cooling systems throughout the facility, to the graphic communications shop, which has been transformed to an energy-savings digital media shop that reduces the volume

of polluting inks and paper. Plumbing students are in charge of the school's photovoltaic system. Drafting and HVAC students go to public buildings in the community and envision redesigns for them with sustainability criteria.

BVT is the one of the first schools in the nation to use a SimSpray paint simulator in the auto body shop. Using this tool, students can learn and perfect auto-painting techniques without using polluting paints with noxious fumes. Students convert sawdust from the construction program into heat-generating wood pellets and recycle used cooking oil from the culinary arts program into biodiesel fuel. The 80 gallons of biofuel produced each week power the school's field and maintenance equipment, the generator for an electric vehicle, and heating test systems in the HVAC program. A byproduct of the biofuel manufacturing process is environmentally preferable soap, which is packaged and sold in the school store as part of a student marketing project. BVT also has transitioned to using only green cleaning products.

To build momentum around learning green careers, BVT partnered with community colleges, businesses, unions, and employment training agencies to secure a Clean Energy Workforce Development Grant from the Commonwealth Corporation, which has provided building science and weatherization, solar photovoltaic, and solar domestic hot-water systems training to career and technical teachers to ensure future workforce understanding of energy-efficient technologies. A regional renewable energy training center has been created at BVT, which offers workforce training in solar and photovoltaic and other emerging renewal energy technologies to an even wider community.

Career vocational technical school students alternate an academic week with a career-technical week. Despite an alternative schedule, BVT sets a high bar for academic performance, with the student population outperforming the state standardized testing average. All students take four years of mathematics and science, and benefit from Blackstone's environmentalist in residence.

Student health, nutrition, and wellbeing are high priorities at BVT. The wellness program was augmented 10 years ago to include a full-time nutritionist. The wellness committee hosts an annual staff and student wellness fair; and has created staff and student fitness passports, where blood pressure, glucose, and cholesterol are measured by nursing staff and students. BVT also partners with Milford Regional Hospital in the school-based health center that offers health services to students. Blackstone has received a USDA HealthierUS Schools Challenge Silver award, and both the culinary arts program and cafeteria participate in a farm to school program.

Hingham High School, Hingham, Mass.

Annual teach-in highlights environmental issues in every subject

Hingham High School (HHS)'s green committee laid the ground work for a blossoming school community effort to reduce consumption, expand green projects, and engage the larger community. Starting with a weeklong celebration -- Green Week -- Hingham High School students have participated in many activities to reduce energy and waste, and raise awareness. Events have included sports teams supervising and promoting a cafeteriawide Slash the Trash competition; Random Acts of Green-Ness awards; and guest speakers, such as Boston Bruins player and environmentalist Andrew Ference.

HHS has engaged with its local community and also takes part in state and national efforts that combine environmental and civic learning, such as fisheries habitat restoration, the Journey North Project, the USGBC Green Apple Day of Service, a teach-in on America Recycles Day, Green Week, and drives to collect and reuse clothing, shoes, and sports equipment. The school offers an environmental-themed teach-in during which the Latin teacher covers how Romans confronted environmental issues, the Spanish teacher discusses environmentalism in Latin America, and U.S. History learns how victory gardens made a big difference.

HHS continues to upgrade facilities to align with its sustainability goals. HHS installed three hydration stations that provide cold, filtered tap water, using financial support from both Aquarion Water Company and the local parent-teacher organization. The stations have proven enormously popular with students and staff alike. HHS also sends 50 to 90 pounds of compostable food scraps directly to compost containers every day after lunch. The volume of compost has risen every year, and now includes compostable lunch trays. Students later sell some of the compost at a local farmers' market, gaining powerful lessons in science and business.

Students have raised funds and rolled up their sleeves to transform a courtyard into a green space with garden beds and a greenhouse. The HHS community has reduced GHG emissions, energy, and water usage. A student was directly involved with many of the retrofit projects after a senior capstone project analyzed how energy efficiency budget allocations could yield the greatest impact. The school installed a U.S. Geological Survey Stream Gage Monitoring Site, and has demonstration solar panels.

Students have access to the Weir River Watershed, Foundry Pond, and Wompatuck State Park, which serve as outdoor learning labs for environmental science classes and the mountain biking program. HHS also supports students' well-being in a number of ways: a schoolwide Climate Committee, guest speakers; strong anti-bullying policies; and a peer facilitator program to train student leaders, peer mediators and peacekeepers.

Hingham incorporates environmental topics, issues, and solutions across academic subjects. The science department integrates environmental and sustainability concepts throughout its curriculum, including capstone projects focused on 21st-century issues. Electronics, auto shop, and wood shop classes explore renewable energy sources, green technology, self-reliance, and sustainable forestry. All history classes examine the role of climate, disease, population, urbanization, and how humans have affected the environment. Economic and mathematics students address market and government efforts to reduce negative environmental externalities within problem sets.

HHS was selected from an international pool as the featured school of the month on the Green Schools Alliance website. HHS won the top statewide honor in the high school category at MassRecycle's 18th annual recycling awards program in Worcester, Mass. in November 2013. The school was awarded a total of $15,500 in Massachusetts Sustainable Materials Recovery money to purchase school recycling equipment and implementation assistance. An HHS student was selected to serve as an Alliance for Climate Education Fellow during the 2014-2015 school year; and another was selected to serve as a U.S. Green School Fellow at the Student Climate and Conservation Congress, sponsored by the Green Schools Alliance and held at the U.S. Fish and Wildlife Service's National Conservation Center in West Virginia. The assistant principal and a parent representative on the HHS Green Team were honored by Green Schools, a Massachusetts-based nonprofit. HHS students from the Student Council Green Committee and environmental science classes were recognized at the Weir River Watershed Association's annual meeting for contributions to the Massachusetts Department of Environmental Protection's River Instream Flow Stewards program. HHS was awarded a $20,000 grant from National Geographic and Sun Chips in the Green Effect program, and won a 2014 Eco Award from *South Shore Living* magazine.

Cambridge Public Schools, Massachusetts

Sustainability office coordinates green products, food, energy, waste, and outdoor space

Cambridge Public Schools (CPS) created an Office for Sustainability in 2010 with a sustainability manager to direct the implementation of sustainable building practices,

green cleaning technologies, waste reduction strategies, energy reduction, behavioral changes, and overall reduced impact on the environment. The Cambridge Green Schools Initiative engages school building occupants, including students, teachers, families, staff, administrators, custodians, and visitors, in behavioral changes that support daily sustainable practices in all classroom and office spaces. The initiative is based upon the PFEWG™ model for sustainability, which encompasses all operations in the categories of products, food, energy, waste, and greenspace.

The Office for Sustainability works in partnership with the City of Cambridge Department of Public Works to implement districtwide school energy saving projects. Since 2009, the city has invested more than $1,000,000 in lighting retrofit projects, boiler replacements, HVAC upgrades, and digital energy management systems, which have reduced the amount of electricity, natural gas and fuel oil that school buildings consume. City funds of $315,000 and grant and rebates and incentives of $760,000 supported these projects. Energy efficiency retrofits and upgrades at numerous school buildings over the past decade have provided the district with significant savings and reduction. New lights use 20-50 percent less electricity than the old ones, and occupancy sensors add to the savings by turning off lights when rooms are vacant. The district features numerous LEED certified buildings and is constructing a new facility that is intended to be net zero.

CPS is committed to reducing the volume of waste generated, reusing and upcycling products that do not need to be thrown away, and recycling waste daily in all classrooms and offices across the district. CPS is expanding composting to all schools; in just four years the composting program has grown from one school that composted to nine full-scale commercial composting schools. The district tracks the amount of waste recycled and composted at schools, and publishes these figures to the community every month. Student clubs participate in districtwide competitions, such as Recycle Craze and the Go Green Challenge. In partnership with organizations such as Green Streets Initiative, Safe Routes to School, and the Cambridge Public Health Department, CPS educates students and staff on how to use sustainable modes of transportation to commute such as walking, biking, carpooling, or using public transportation.

CPS is committed to protecting, expanding, and providing healthy outdoor environments for all school building occupants, including an over 45 percent free- and reduced-price lunch eligible student population. Fostering a respect for the outdoors and providing opportunities for outdoor environmental education, play, and learning about nature is central to this mission. The district encourages classes to take trips to local natural resources, including Alewife Reservation, Fresh Pond Reservation, the water department, and other local parks and outdoor spaces.

These visits offer classes, kids' walks, lessons, and other resources to families and schools.

The facilities department has inventoried, recycled, and replaced outdated custodial cleaning equipment with new equipment that uses environmentally friendly products, methods, and supplies. All pest management plans continue to be updated, schools use non-VOC paint when possible, and facilities also use low-environmental-impact ice melt. In partnership with the Cambridge Health Department, schools are working to increase student and staff daily use of reusable water bottles, bubblers, and tap water in place of disposable options.

CPS is a part of Michelle Obama's "Let's Move!" national campaign to end childhood obesity. The Tasty Choices Program is an essential part of the ongoing work to help students stay healthy and in school so that they can reach their academic potential. Through this program, nutrition staff collaborates with the schools' Food Services Department to increase the number of healthy and appealing food choices available to students. As part of the Tasty Choices Program, a farm-to-school program brings locally grown, sustainable food into the school cafeterias, including nectarines, cider, apples, peaches, tomatoes, butternut squash, carrots, and pickles. The district is a recipient of the Robert Wood Johnson Foundation's Roadmaps to Health Prize.

CPS ensures effective environmental and sustainability education throughout its curriculum in all grades, through special projects initiated by teachers, student-run clubs, and resources and workshops provided by the sustainability manager and Office for Sustainability. Once each month, the Cambridge Green Schools Initiative e-newsletter provides educational and curriculum links and supplements for staff, and a comprehensive sustainability website offers extensive resources for classroom teachers. CPS partners with the nonprofit CitySprouts, which provides a schoolyard garden for each school, allowing students and teachers to grow plants and engage in hands-on learning, environmental stewardship, and the physical and sensory experience of growing and eating food. This outdoor learning experience is a core element of students' education.

The sustainability manager gives presentations and workshops to all-staff meeting and individual classes, including lessons related to sustainability, environment, and climate change. A Green Hero Award is given every two months to an individual or group making a significant contribution toward environmental sustainability in the school district. The CPS current science curriculum addresses sustainability and climate change. The science department is rolling out new curriculum over the next few years across all grades that will expand upon issues of sustainability.

Minnesota

Redtail Ridge Elementary School, Savage, Minn.

Promoting environmental stewardship and outdoor education every day

Environmental education and sustainability practices are an integral part of everyday life at Redtail Ridge Elementary School. On any given weekday morning you will likely find Junior Naturalists meeting with their advisors and preparing to educate students in the school on their organics recycling program; before- and after-school program participants emptying classroom recycling bins; the environmental STEM (E-STEM) team of teachers meeting to discuss upcoming festivals; and teachers organizing and checking out materials from the environmental resource area for their upcoming outdoor lesson. These practices are a way of life at Redtail Ridge Elementary, and are a passion for both staff members and students alike.

Staff and students at Redtail Ridge not only believe in the importance of strong environmental education and promoting stewardship, but also live it each and every day. This is evident from classroom experiments on the effects of pollution on plants sitting in hallway windows, students following the waste disposal program, classes sitting in the boulder garden recording observations in their science notebooks, junior naturalists replenishing bird feeders, and environmentally-focused morning meetings.

What makes Redtail Ridge successful in embedding both environmental education and E-STEM education into the daily routine is the people that fill the building. From a supportive administrator, to the diligent custodial staff, to willing classroom teachers, the tireless staff works to use the environment to educate children. What makes Redtail Ridge unique is the willingness to collaborate, and draw on each other's strengths. At any time you might see a fifth-grade classroom taking a kindergarten class snowshoeing. They'll go again the next day with a group of second graders.

Limiting the environmental impact of Redtail Ridge has been the focus since the building's conception. The school is equipped with an automated energy management system for controlling and maintaining a healthy environment and for running the building efficiently. The school practices preventive maintenance and has added water-efficient fixtures throughout the building. Natural daylight is used as much as possible in the lunchroom and in classrooms throughout the building. In 2011, Redtail Ridge earned EPA ENERGY STAR recognition.

In an effort to provide a healthy environment, Redtail Ridge is birthday-treat free, participates in farm-to-school programs, and receives Safe Spaces presentations. In

order to promote an active lifestyle, students and staff participate in gym, recess, and active brain breaks. To promote reuse, in February the school hosts a school wide book swap, encouraging reusing books instead of buying new.

Students are able to track the daily progression of the native prairie restoration. Funds for the native prairie project were raised through participation in the Project Green Sneakers competition, which was led by the Junior Naturalist team and supported by the community, resulting in a first-place finish. The prairie will be the result of collaboration among the teachers, students, Dads of Great Students club, district grounds crew, and Prior Lake High School Eco-Team members.

The school's community partners are many. The Shakopee Mdewakanton Sioux Community provides Redtail Ridge with the district organic compost site. Its organics composting efforts began in 2009 with a pig farmer in central Minnesota who would take all of the food waste, process it, and feed his pigs. Once the district outgrew his operation, the Mdewakanton Sioux Community rallied with Redtail Ridge to create the current system, which takes all of the school's food waste and other organic materials and turns it into rich compost for area residents. The Prior Lake Savage Community Education supports both the Junior Naturalist and Little Explorers programs, which provide environmental stewardship through leadership and service opportunities. A Richardson Nature Center naturalist meets with each grade level for half-day sessions. A partnership with the St. Catherine's University Eco-Stars program increases students' knowledge in environmental engineering and helps the teachers to see how engineering can be taught through an environmental lens.

In 2012, Prior Lake Savage Area Schools became the first district to adopt a districtwide E-STEM approach in the state of Minnesota. This was the springboard for the Redtail Ridge teachers to continue integrating environmental education across the curriculum, while working to embed engineering. In 2014, the school has added opportunities such as Explore Lab Kits from The Works and Engineering is Elementary curriculum and trainings. Whether construction of a water filtration system in fifth grade or a bird's nest in kindergarten, the engineering and design processes folded into lessons have an environmental focus.

The school's dedication to environmental and sustainability concepts are evident in students' level and proficiency on the Minnesota Comprehensive Assessments in Science. In 2014, 86.1 percent of Redtail Ridge fifth-grade students met or exceeded the standards on the science Minnesota Comprehensive Assessments test, compared to the state average, which was 61.2 percent.

Harambee Community Cultures/Environmental Science School, Maplewood, Minn.

Working together for a common purpose

Created as an interdistrict voluntary integration project, Harambee draws students from multiple geographic areas, including over 69 percent free- and reduced-price lunch eligible and over 24 percent limited English proficient students. The school's year-round calendar and looping structure provide for consistent learning. For more than 18 years, the school has been a place where students from diverse cultural, racial, and socioeconomic backgrounds learn together. In 2013, the school became part of the Roseville Area Schools, providing the benefits of unified governing system but keeping the multiple district student body and diverse population. The school's name is a Swahili word that means "working together for a common purpose." Teamwork within Harambee and the larger community yields rich resources, enabling the school to reduce environmental impact while increasing the health of the community and the quality of environmental education.

Harambee's magnet foci of environmental science and community cultures were carefully chosen and designed to work in unison as integrating themes. These foci are integrated into curricula by classroom teachers, but also have been designated as special-focus classes with a project-based approach that connects people and the environment. Students participate in these classes much like traditional specialty classes like music, physical education and art. All classrooms use morning meeting environmental education themes. An intersession program during school breaks incorporates sustainability, and students maintain science notebooks. The school uses engineering to introduce students to green careers and technologies. For example, fifth graders designed water filtration systems and evaluated them on effectiveness and sustainability.

Fruitful partnerships have led to Harambee's participation in food waste recycling, energy reduction efforts, and important work to make school grounds more sustainable. Collaborations with the local watershed district, and the county conservation district make these improvements possible. The school has received grant funding to begin solar and wind projects onsite, and to construct rain gardens campuswide. Located on 28 acres, the campus features a trail system, two outdoor classrooms, gardens, and wildlife habitats.

Thanks to other collaborative efforts, Harambee offers a healthier environment for both staff and students with initiatives like a peanut-free environment, changes to school policies about sugary treats in classrooms, and a culture of wellness in the

building. Harambee participates in a farm to school program, and a trainer from the Minnesota State Horticulture Society works with staff and parents. Twelve raised bed gardens are maintained by students, who also engage in composting through Barthold Hog Farms Food Recycling Program. The school owns cross-country skis and snowshoes for outdoor education use, and participates in Girls on the Run and Fitnessgram.

In 2013-14, a whole-school migration study gave the Harambee community insight into the life cycle and annual migration of the butterfly. Students began with firsthand study on school grounds, using designated milkweed prairie areas as observation and inquiry spaces. At each grade level, students addressed specific science standards, but also expanded into multiple subject areas. Students compared fiction and nonfiction books about butterflies, using resources like eBooks and interactive programs like Journey North. Students wrote and read poetry about caterpillars and butterflies, and studied human connections to butterflies across time and geography. Through a Minnesota State Arts Board grant, students worked with guest artists to create butterfly sculptures and learn about the music and cultures of the people in the Mexican region where the butterflies migrate in winter. The project culminated with a schoolwide butterfly parade to show off the beautiful works of art and celebrate the installation of a giant monarch mobile in the school's front entryway.

The project extended into the following year: Students participated in online citizen science projects, and created ambassador butterflies to send to schools in the overwintering region. Harambee connected with the University of Minnesota's Monarch lab, and invited lab staff to the school to participate in the project. A group of teachers participated in an extended workshop at the University and wrote grants to purchase related curricular materials. As the Harambee community learned more about the complex environmental issues facing the Monarch, it decided to take action. Students began collecting milkweed seeds and researched the most successful ways to propagate plants. They wrote a grant for a specific butterfly garden that would make grounds better for pollinators, and prepared over 1000 milkweed seeds to distribute both seeds and plants to the community. An additional grant from the Minnesota Ornithologists Union now provides support to expand Harambee's migration study to birds, as well as to other grade levels, where students have moved into new kinds of insect study. Harambee's initial authentic learning experience grew into actions that have positively affected the school and larger community.

Rockford Middle School – Center for Environmental Studies, Rockford, Minn.

Environmental and outdoor education help to ensure authentic STEM learning

Rockford Middle School-Center for Environmental Studies (RMS-CES) is a grade five through eight middle school located in a rural area west of the Twin Cities, serving 540 students in a building constructed in 1953. RMS-CES became a STEM school with a focus on using the environment as a context for learning during the 2010-2011 school year. Over the subsequent four years, adjustments have been made to the curriculum, building, and outdoor spaces that reflect this environmental theme. RMS-CES has collaborated with community experts, built partnerships with environmental and outdoor education organizations, and connected students to the environment through authentic learning experiences.

RMS-CES has core classes of science, math, reading, and social studies as well as specialist classes of art, agriculture, STEM Literacy, communications, Quest, music, physical education, and health. These specialist classes have expanded over the past four years to include technology, agriculture, environmental education, and healthy lifestyles topics. In addition, the school added an exploratory class to the weekly rotation; these classes integrate project-based learning around a driving question and incorporate STEM standards. Such classes include: From Grass to Glass, in which students explore how milk ends up on their table, and Reducing Carbon Footprints, where students learn about vermicomposting and repurpose items from a thrift store. Other exploratory classes focus on digital storytelling, photography, coding, trees and their uses, mining in Minnesota, invasive species, and water quality testing. After-school activities also include sustainability learning opportunities such as Future Farmers of America, Envirothon, and Green Team.

Teachers have been trained with a variety of outdoor, environmental, and STEM professional development opportunities. Classes through the Department of Natural Resources, Jeffers Foundation, Minnesota Association for Environmental Education, Project WET, Project WILD, and PLT provide teachers with ways to take classes outside and incorporate environmental lessons into content areas. School partners such as Deep Portage Learning Center, the Department of Natural Resources, Three Rivers Park District, the University of Minnesota Raptor Center, the Minnesota Landscape Arboretum, 4-H University of Minnesota Extension, Wright County Soil and Water, and Landscape Restoration provide chances for students to learn from experts, spend time in nature, learn real-world environmental applications, and connect with local experts in the field.

RMS-CES is dedicated to providing outdoor, recreational, and physical activities to all students, as well as presenting healthy food choices that comply with federal guidelines. All students receive 15 minutes of recess each day, providing exercise, stress relief, and the chance to socialize on a new natural playscape. Students and staff use water-bottle filling stations that track the number of plastic bottles diverted from a landfill. Students have the chance to join school sports, as well as after-school exercise activities such as Marathon Club, Jumping Club, and Ski Club; community education offers outdoor activities such as snowshoeing. All grade levels engage in outdoor field experiences at least three times per year. Staff members are encouraged to take part in wellness activities offered through the district, including exercise activities and an all-staff winter activity weekend at Deep Portage, an environmental education and outdoor recreation center.

Students and staff are devoted to reducing waste and environmental impact. The exploratory classes launched a waste challenge whereby groups tracked and measured the amount of waste in classroom garbage bins that could be recycled, created signage to hang on trash bins and in the composting area in the cafeteria, and called catalogue companies to reduce unnecessary paper. Education about organics recycling among students and staff diverted 47 tons of organic waste from a landfill into compost. Fifth and sixth graders planted a rain garden with Wright County Soil and Water Conservation District officials. RMS-CES participates in farm to school and has a school garden. An efficient new HVAC system, including boilers and water heaters, and a new roof on one-third of the building all help reduce energy use and costs. All classroom spaces have made the transition to motion-sensor lighting, and a program has been installed districtwide to encourage efficient printing and copying.

RMS-CES hosts multiple events each year for parents and community members to view and experience the events taking place at the environmental STEM magnet school. In the fall, the STEM Showcase highlights partnerships and activities in the building. School partners such as the University of Minnesota Raptor Center, Three Rivers Park District, the Ames-Florida Stork House, the Boy and Girl Scouts, Future Farmers of America, and LEGO League have booths to showcase their connections with RMS-CES. Student demonstrations and hands-on activities are a highlight; this year, visitors were encouraged to interact with the pieces created in art class for the Global Cardboard Challenge and to make bowls for the food shelf fundraiser. In the spring, the Arts and Academics Showcase draws parents and community members. This night highlights student work, environmental themes and topics, and STEM connections in the classroom. Parents and visitors are encouraged to view student projects and assignments from classrooms, exploratory units, and after school activities.

The STEM Literacy class is based on both technology and environmental education standards. The agriculture curriculum includes U.S. and state gardening, animal science, soil and water science, horticulture, agricultural history, and careers in agriculture. Students go to Baker Near Wilderness Settlement for outdoor education two times a year. Students engage in invasive species removal, trail clean-up, and wetlands maintenance work.

RMS-CES students are empowered with engaging and authentic opportunities, and the school is proud to showcase learning experiences, buildings and grounds, and environmental STEM curriculum.

City of Lakes Waldorf School, Minneapolis, Minn.

Several hours of outdoor time daily ensures direct experience with environment

City of Lakes Waldorf School (CLWS) is celebrating its 26th year of providing a high quality Waldorf education to over 250 students annually, strengthening its position as a school, community, and environmental leader. Its work has positively affected student learning, and served as a reflection of students' growing sense of responsibility for, and connection to, all life on our planet.

CLWS has taken many actions to reduce environmental impact and costs. A Minneapolis Climate Change Grant funded by the *American Recovery and Reinvestment Act* in 2011 allowed reduction of the collective carbon footprint. It has developed an environmental purchasing policy, purchasing 75 percent of products from environmentally preferable sources. It receives energy efficiency building and equipment assessments from the Minnesota Retiree Environmental Technical Assistance Program. The school now has timers placed on HVAC equipment, replaced steam traps, and retrofitted lights. CLWS installed a 5,000-square-foot rain garden that replaced paved surfaces with mixed native plants, increasing diversity while improving soil and air quality. By disconnecting downspouts and rerouting rainwater into the rain garden, landscaping and water conservation efforts have been vastly improved. CLWS received a Mississippi Watershed Management grant to transform a concrete slab into an outdoor classroom for play and learning, with water features central in its design and use. Water taps, faucets, fountains, screens and aerators are cleaned regularly to avoid contamination. CLWS promotes Alternative Ways to School Week, resulting in 1,200 car trips not taken over three weeks; and initiated a networking group of elementary school "green" representatives. Additionally, the school offers green resource kits to families — containing energy saving meters, heat sensors, and weatherizing tools. CLWS received a Hennepin County Waste Abatement grant to enhance the onsite

composting program; ensure all school events are waste-free; develop an environmentally preferable purchasing policy; and continue partnerships with nonprofits via clothing and food donations.

The school's mission emphasizes developing whole, balanced human beings who value and understand their interdependence with all life. CLWS' philosophy is that a child's relationship to nature is cultivated through direct experience in the natural world. The school's curriculum provides students with ample opportunities to be nourished by the natural world, even within an urban setting. CLWS was awarded a 2013 Minnesota Independent School Forum STEM grant to enhance the science program. Equipment purchases and teacher training have been funded, allowing newer teachers to learn from veterans about the school's phenomenological approach to science.

CLWS hired an architectural firm to redesign the quarter-acre outdoor space in 2013. Plans are being considered in concert with an internal building redesign which will involve a future capital campaign. The outdoor redesign will integrate more natural play spaces and equipment, a gardening program, environmental education, outdoor cooking and community use. CWLS expects that this project, located on a busy corner, will inspire and promote development of new green spaces throughout the Twin Cities. CLWS works with a biodynamic gardener to develop its gardening program, including a greenhouse and raised-bed vegetable gardens using permaculture principles. From the waste reduction efforts, third grade students began a vermiculture program. Fifth grade students study botany and the school's rain garden plants and the early childhood outdoor classroom offers hands-on environmental learning. The students have many opportunities through the middle-school grades to experience overnight nature and wilderness trips.

CLWS also has undertaken efforts to improve student and staff health and wellness. A curriculum cornerstone is outdoor time; students experience up to two hours of outdoor time daily. The school partners with the Wedge Co-op to provide nutritious, organic foods via a catered hot lunch program for students and staff. In its third year, this program has expanded to include catering for school and parent education meetings. Although contaminant control testing and procedures can always be improved, the building/property committee meets regularly to address needs as they arise.

West St. Paul-Mendota Heights-Eagan School District 197, Minnesota

Developing student leaders through academic, athletic, and artistic opportunities

West St. Paul-Mendota Heights-Eagan Area Schools serves more than 4,800 students from the communities of Eagan, Inver Grove Heights, Lilydale, Mendota, Mendota Heights, Sunfish Lake and West St. Paul, Minnesota through five elementary schools, two middle schools, and one high school. District 197 is fortunate to have a vibrant school community filled with a variety of academic, athletic, and artistic opportunities for students at every age, from prekindergarten to grade 12.

District 197 is committed to operating all of its facilities efficiently and fully supports all of the initiatives of LIVEGREEN. LIVEGREEN is the district's own sustainability program, which promotes energy saving and recycling initiatives throughout the district. Each school in the district has a LIVEGREEN team consisting of students and a teacher. These teams help implement low-cost or no-cost strategies to reduce energy use, promote recycling and composting, and focus on conserving resources. LIVEGREEN goes beyond a standard energy-reduction program by incorporating right-sizing waste streams, recycling, composting, green cleaners, diesel emissions reduction, paper reduction, behavioral changes, and engineering controls into its initiatives. Through sustainability efforts, the district has avoided more than $1,900,000 in utility costs since 2003.

District 197 uses B3 Benchmarking and EnergyPrint, an independent third-party utility reporting service, to track and report quarterly usage and savings. The district reduced its bus fleet by nine buses, and participates in Safe Routes to School through a grant from the Minnesota Department of Transportation. LIVEGREEN events across the district include the Keep America Beautiful Recycle Bowl, LIVEGREEN Week, Earth Day, and compost sales. LIVEGREEN is always looking for smart, green, and efficient practices to incorporate into its district. The district has installed water bottle filling stations in each building, minimizing use of disposable plastic bottles, with the first one paid for through LIVEGREEN activities. All eight schools of District 197 have earned ENERGY STAR certifications. District 197 has a policy to recommission each building every three years. Additionally, in 2014-15, the district was awarded a full-time Minnesota GreenCorps member, who focused on reducing energy consumption in all district buildings.

District 197, through many activities and partnerships, improves the health and wellness of students and staff. Thanks to a generous grant from C. H. Robinson Worldwide, Inc. and the Let's Move Salad Bars to Schools initiative, all eight schools

in District 197 operate salad bars that feature a variety of fruit, vegetable, whole grain, legume, and low-fat dairy options during breakfast and lunch. District 197 also is the recipient of funding through the USDA's Fresh Fruit and Vegetable Program to offer a weekly snack program at Garlough Environmental Magnet and Moreland Arts and Health Sciences Magnet schools. In 2011-12, all five District 197 elementary schools earned a silver award in the HealthierUS Schools Challenge. District 197's School-Aged Care program teamed up with the Dakota County Public Health Department in 2014 to send six School-Aged Care site employees to the Minnesota Department of Education's workshop Active Before/After School Time. The training covered the importance of physical activity, the connection to academic indicators, tangible examples of movement to incorporate into lessons, and how to develop students as leaders in physical activity initiatives.

District 197 provides pathways for students in environmental education, health sciences, and STEM education. In addition to these pathways, all students in the district from kindergarten through grade six participate in outdoor environmental education through a local partner, Dodge Nature Center. The district's elementary science curriculum provides a hands-on, inquiry based experience for all students through the use of Full Option Science System (FOSS) science kits, LEGO kits, and National Geographic resources. The middle school curriculum provides a hands-on, inquiry-based curriculum, and the high school provides comprehensive science course opportunities including AP biology, chemistry, and physics classes.

Students at Moreland participate in a program called Integrated Science Education Outreach). (InSciEd Out). InSciEd Out comes from a district partnership with the Mayo Clinic and the University of Minnesota. Students participate in this program in grades kindergarten through six at Moreland Elementary and Heritage Middle School. The program will continue to expand until there is programming for all grades kindergarten through 12. All students at Pilot Knob Elementary participate in the Project Lead the Way curriculum on a weekly basis. Students in grades three and four have an opportunity to participate in a tech squad that provides student leadership and support for the use of technology in the classroom for both students and teachers.

A key partner in providing an environmental pathway for students is Dodge Nature Center. The Dodge Nature Center is an environmental education and habitat restoration organization located on 462 acres in West St. Paul and Mendota Heights. Dodge Nature Center was founded in 1967 by Olivia Irvine Dodge and has been recognized nationally as a leader in environmental education. All students in the district from kindergarten through grade six participate in three field experiences at Dodge annually that are tied to the grade-level science curriculum and Minnesota State Science Standards.

University of Minnesota, Morris, Morris, Minn.

Teaching sustainability on the prairie

For more than 100 years, the University of Minnesota, Morris, has been grounded in a mission of environmental sustainability. As an undergraduate-focused, residential, liberal arts community on the western edge of the prairie in Minnesota, which enrolls over 1,900 students, Morris offers students a personalized education to prepare them for lifelong learning, flexibility in the career world of the future, and global citizenship.

In 2014, the university received the prestigious Second Nature Climate Leadership Award. Morris is consistently featured in top sustainability rankings, including the Princeton Review Top 322 Green Schools and Sierra Club Cool Schools. Additionally, Morris holds STARS Gold rating from AASHE, becoming one of the first schools to earn the Gold recognition.

The university cut its carbon footprint by 40 percent between 2005 and 2012 using onsite energy sources, and is on a path toward carbon neutrality by 2020. Significantly, Morris reduced its electricity consumption by 1,000,000 kW/h over that time period. Two university-owned, onsite, 1.65 megawatt wind turbines produce 10 million kWh of electrical power annually, meeting 60 percent of the electrical needs for the campus. A 32-unit solar thermal array heats the Regional Fitness Center pool, reducing carbon dioxide emissions by 30,000 pounds each year. Two solar photovoltaic systems on campus convert sunlight into electricity, and generate more than 30,000 kWh annually. A biomass gasifier plant on campus uses local natural resources to heat and cool the campus.

Morris builds and renovates green. In 2012, the newly renovated Welcome Center received the LEED Gold rating. The university recently built a new residence hall, the Green Prairie Community Residence Hall, which also received a LEED Gold rating.

Through the recycling and composting program, the university has reduced waste by 60 tons per year. Morris has a green cleaning policy that is used in making decisions about chemicals that are purchased and used on campus. To reduce hazardous chemicals used during lab instruction, the chemistry department moved from macro-scale to micro-scale chemistry experiments, and green chemistry has been incorporated into the organic chemistry lab. The campus also has a comprehensive IAQ program.

Morris has taken huge steps to improve the health and wellness of students, staff, and the local community. The Regional Fitness Center is a shared campus and community facility, with swimming pools, basketball courts, an indoor track, and exercise equipment. About two-thirds of employees participate in a wellness program that provides free flu shots, biometric screenings, and reduced health insurance premiums with use of the Regional Fitness Center. Morris Dining Services uses 30 percent locally sourced food, and offers a range of healthy options, including vegetarian and vegan choices. Morris also is the lead organizing partner of the Morris Healthy Eating Initiative, which focuses on improving health outcomes on campus and in the community. Faculty and staff have the option to participate in a bike commuter program, and the university works in collaboration with the city of Morris to support a local transit system that provides affordable fares to riders. Morris also uses a rideshare program called ZimRide to coordinate rides, and the school was recognized as having one of the highest percentage of transit users at any college in the United States. Morris is working to increase the fuel economy of its fleet, which is now 40 percent low-emission hybrid.

Morris is home to the Center for Small Towns, which connects students and communities to create sustainable solutions. Morris has both environmental studies and environmental science majors. Among Morris academic disciplines, 78 percent offer at least one sustainability course, and 23 percent of Morris faculty perform sustainability-related research or activities. Morris has an active summer program called Wind-STEP, which engages Native American students in science and engineering with a focus on wind development. A Howard Hughes Medical Institute grant provides science opportunities to all Morris students, with a special focus on first generation and low-income students, along with students of color. Morris theater productions, like *Sophie* and the *Adventures of Ice Island*, help educate local children about the role they can play in reducing waste. Morris students are working with the Morris Area Schools to incorporate composting into their waste system. Additionally, Morris is developing the Morris Sustainability Leadership for the Future program with a group of 15 fellows — including students, faculty, and staff — who will develop the next generation of leaders prepared to live in a carbon-constrained, more sustainable world.

Mississippi

Oxford School District, Oxford, Miss.

Promising green practices: Good for Oxford schools

The Oxford School District (OSD)'s strategic plan represents its ongoing work to reduce environmental impact and costs, improve the health and wellness of students and staff, and provide an effective environmental and sustainability education for

students. OSD's strategic plan specifically references energy efficiency, environmental education, and health. OSD's commitment to these areas is visible daily throughout eight school campuses, where OSD educates roughly 4,000 students in grades kindergarten through 12.

OSD was chosen to participate in the Alliance to Save Energy's green schools program, funded in part by the Tennessee Valley Authority. After this two-year program concluded, OSD partnered with Oxford Electric to keep up the effort. The Oxford Green Schools program was initiated in 2010, and has led to energy and cost savings every year since.

As a result of a partnership with Johnson Controls, the newly constructed Oxford High School (OHS) is on its way to being the first LEED-certified high school in Mississippi and is anticipated to have more than $6,000,000 in overall energy cost savings over the next 15 years. The use of high albedo concrete helps the new building design by reducing GHG emissions and lowering the potential heat gain to the building. OHS uses energy recovery units, which pretreat incoming fresh air to reduce humidity, along with humidification equipment to control interior air. This means that the mechanical equipment doesn't have to cool the building's air to 72 degrees, but can cool the building to 76 degrees instead.

Around the district, lavatories with timed sensors and low-flow toilets and urinals conserve water. Schools throughout the district have pop-up valves allowing water to flow for a predetermined amount of time, and kitchen sinks throughout the district are supplied with foot pedal valves. Onsite water retention lowers the burden on the local established natural infrastructure. Recycling of plastic, paper, and cardboard is practiced at every school. The city of Oxford provides recycle tubs of certain colors for separation of recyclables, and recycling is picked up weekly.

OSD partnered with the City of Oxford Pathways Commission to develop biking and walking lanes dedicated for student transportation around and between school campuses. School bus drivers do not idle at schools while waiting on students to load and unload, a practice covered in staff development exercises. Approximately half of students ride OSD buses. The Mississippi State Department of Health has plans to perform radon screening in every school, with three schools completed to date. All employees receive online asthma training, covering procedures to minimize students' asthma risks while in the school environment.

Through Good Food for Oxford Schools, a program initially funded through a USDA Farm to School Planning Grant, permaculture principles are employed at two school gardens. All school gardens are built into natural landscapes with rain barrels and irrigation systems in place. Also thanks to this program, OSD school cafeterias have increased cooking from scratch menu items from 40 percent to 75 percent, while

increasing local purchasing for cafeteria menus, including a Harvest of the Month. Schools now have salad bars, and combi-ovens have replaced deep-fat fryers. Four schools have gardens, cooking demos are offered, and Food Day is celebrated. The district's school wellness policy was adopted so all students can have the knowledge and skills necessary to make nutritious food choices and enjoyable physical activity choices for a lifetime. OSD provides a fitness facility and weekly group exercise classes for all school district employees.

In school gardens, students learn about key relationships between dynamic environmental, energy and human systems. Good Food for Oxford Schools developed and offers curriculum and lesson plans to develop STEM content, knowledge, and thinking skills. School gardens provide the perfect setting for engaging students in a hands-on and interactive manner: they promote scientific investigation and critical thinking, both of which are key components of STEM education.

Through Oxford Green Schools, each school campus has a green team that involves the whole school in the energy conservation effort by learning about green careers. Scott Center students work on civic knowledge and skills by growing seedlings for other school programs. Student-led food clubs exist at the middle school and high school levels, engaging youth to lead their own changes. The food clubs also help coordinate Good Food for Oxford Schools community events through the school year.

Montana

Rattlesnake Elementary School, Missoula, Mont.

Establishing a bar for sustainability and wellness

Rattlesnake Elementary School, set within the wilderness of the Rocky Mountains, serves 480 students in a 61,000 square-foot facility. Surrounding this community are two of the largest sections of roadless wilderness in the continental United States. To the west is the Frank Church Wilderness Area, and to the east is the Bob Marshal Wilderness Area. Incorporating sustainability programming provides a natural extension of Missoula community values. Rattlesnake has received extensive support and mentoring from the University of Montana's Department of Curriculum and Instruction to begin its green school journey.

Rattlesnake has begun a student-centered resource efficiency program. The school conducted an energy audit using Energy Cap software. This data was leveraged, in the form of classroom charts, for learning. The resulting analysis has led to the creation of an energy management plan and numerous steps to reduce

environmental impact and costs. Staff received professional development on energy-reduction practices and strategies, and created an energy-use inventory of practices and experiences for every classroom. Rattlesnake covered older windows with plastic to avoid excess energy loss, and installed a demonstration solar panel for student monitoring.

Seventy-five percent of school landscaping consists of regionally appropriate or native landscaping, or water-efficient landscaping that does not require irrigation. As far as waste reduction, students have taken the lead on composting and recycling projects, with third graders collecting recycling from all classrooms every two weeks. So great is the school's enthusiasm for recycling that it managed to double collection within one month. Students conduct recycling audits and have given presentation to one another about the school's efforts to recycle. The school participated in a citywide Bike, Walk, and Bus Week.

Each classroom's air quality is regulated and monitored to minimize potential asthma triggers. HVAC maintenance and filter changes occur at regular intervals. The HVAC system is set to conduct a 24-hour system flush, ensuring air movement and quality for the entire school community. Facilities personnel inspect the classroom dampers, heating ventilation filters, and ventilation fans on a regular basis to ensure optimal air quality.

The school staff actively promotes healthy food choices in classrooms. They do not use food to celebrate various occasions, but instead leverage the school's extensive gardens for learning. Curriculum integration enables students to engage in experiential and authentic learning experiences as they not only eat nutritious food, but also grow it. The gardening program serves to unify the school and broader community. Organizations such as Garden City Harvest and Missoula Urban Development actively serve to support the garden program and its integration into classroom learning. The garden committee reaches out to the parent community for support in programming.

The school's physical education teacher worked with a fifth grade class to conduct a study on student movement during the day. The students wore a pedometer bracelet called a Sqord that they connected to a computer to see how many steps they have been taking, along with other information. The students then used this data to compare their movement habits over a period of time. All kindergarten through fifth grade teachers have submitted ideas for movement lessons and creative ways to engage students in the classroom. The school offers a run club and an annual fun run, and partners with the University of Montana to offer counseling for students who struggle with depression and anxiety.

Rattlesnake students have engaged in experiential and place-based learning activities that enable them to incorporate sustainability topics into their lives. Every classroom participates in gardening that is aligned to grade level curricula, and students keep nature journals that document their sustainability learning. Staff have formed professional learning communities about sustainability programming. Outdoor education activities include walking to Rattlesnake Creek, walks to a local farm, stream monitoring, watershed education, and a hike to the Glacial Lake Missoula line on Mount Jumbo. The school has two compost bins and uses them to support the garden program and as learning tools.

Rattlesnake has created numerous relationships with local nonprofits that focus on a wide variety of sustainability-related topic areas. The school has a visiting naturalist, and students take field trips using public transportation and walking to visit community businesses and nonprofits.

Seeley Lake Elementary School, Seeley Lake, Mont.

Considering the wellbeing of the community through learning and action

Seeley Lake Elementary School is a Title I school set within the wilderness of the Swan Valley, serving 211 students in a 47,000 square-foot facility. It has begun its green schools journey by collecting baseline data and developing strategies for change in every Pillar and Element of ED-GRS under the mentorship of the University of Montana's Department of Curriculum and Instruction.

Seeley Lake developed a unique partnership for International Baccalaureate programming with the nearby feeder high school, which is in a separate district but located in the same town. Through their middle years program partnership, these two schools have established a unique situation that achieves a complete kindergarten through grade 12 sustainability program integration. From kindergarten to their senior year, students are shaped by sustainability learning and action.

The school has a strong culture of environmental and outdoor education. Classes cover seeds, global warming, and alternative fuels. Hands-on activities include stream monitoring, watershed education, and lessons with a visiting naturalist. Seeley Lake offers skis, snowshoes, and mountain bikes for students and families to borrow. Seeley Lake welcomes climate change speakers, and elementary students have worked with the neighboring high school to build a greenhouse. Teachers make use of a sustainability resource folder that includes lesson plans, activities, videos, templates, and curriculum documentation.

Seeley Lake conducted an energy audit with the assistance of Bonneville Power Administration and Energy Cap software. It called providers who had never before received these requests from schools, and developed schoolwide data collection charts for classroom teachers. The school retrofitted lights through the facility and replaced exterior windows. Seeley Lake is working to ensure that all computers, monitors, printers, copiers, and office equipment is set to the highest degree of energy efficiency possible. The school conducted a professional development seminar for all staff on energy-efficient practices and curriculum integration.

The school engineer built a large container for recycling, and the school is piloting a composting project. Every two weeks, a green team member hauls the recycling to the local refuse site. Seeley Lake has developed a documentation sheet that is filled out by the green team when the recycling is deposited, indicating the fraction of the 30-gallon container filled. Monthly calculations are made and posted for staff to share with students. Eighty percent of landscaping consists of native, water-efficient, or regionally appropriate plants that do not require additional irrigation. Each month, the school takes on a new sustainability project, such as a no-waste lunch or an electricity use reduction month, with students brainstorming strategies, implementing practices, and analyzing data.

Seeley Lake has a parking plan in place to reduce idling and improve outdoor air quality. The school reached out to local organizations and community members to ensure that all students had a bike helmet and received instruction on safety practices, and that safe bike routes were developed.

Seeley Lake's partnership with Seeley-Swan High School for greenhouse work serves to provide healthy food options for the school and meaningful learning experiences for elementary students. Healthy cooking courses are offered that allow students to see how healthy eating practices translate to the home. At least 50 percent of students' annual physical education takes place outdoors. Seeley Lake Elementary Outside offers outdoor and adventure education to all students at least two days every month. Students participate in Nordic skiing and trail running, among other outdoor activities.

The school offers free gym memberships to all staff members. Seeley Lake offers Alta-Care mental health services during the school day. The school uses the Olweus Bullying Prevention Program and offers weekly counseling. Teachers use the Strong Kids curriculum in a weekly health class, and Seeley Lake was a HealthierUS Schools Challenge Bronze awardee.

Given its location in the mountains of Montana, Seeley Lake Elementary has a robust culture of outdoor education, which provides the basis for growing its sustainability curriculum and activities schoolwide.

Seeley-Swan High School, Seeley Lake, Mont.

Real-world sustainability learning

To illustrate the uniqueness of Seeley-Swan High School, and its students' relationship with the natural world, consider its location: a remote, sparsely populated valley flanked by the Bob Marshall and Mission Mountain Wildernesses. The high school serves 102 students in a 46,000 square-foot construction on 80 acres of forested land. Like the other Montana honorees, it has received its green schools start with support and mentoring from the University of Montana's Department of Curriculum and Instruction, which has helped Seeley-Swan establish a baseline, develop a plan, and implement sustainability practices.

Seeley-Swan conducted an energy audit with the Bonneville Power Administration and is using Energy Cap software. The school has developed a list of energy conservation behaviors, and conducted energy conservation professional development. Ninety-five percent of landscaping consists of native, water-efficient, and regionally appropriate plantings that do not require irrigation. The football field is irrigated solely from creek water to minimize irrigation water usage. Seeley-Swan helps to coordinate ride shares among students living in rural areas.

Students have assumed a leadership role and created a culture of stewardship through the Seeley-Swan recycling program. The school had to work around the fact that recycling pickup could not occur because of the rural location. As a result, teachers and administrators take the recycling to the City of Missoula on a monthly basis, loading up their trucks. Students weigh and audit their recycling before it goes.

The school partnered with the nearby elementary school and charitable organizations to establish safe bike routes, ensure dissemination of safe practices, and provide every student with a helmet.

Efforts are made to ensure healthy air quality, which is critical to student attendance and performance. Each classroom's air quality is regulated by a damper and fan, which are set and checked on a regular basis to ensure the correct amount fresh air intake.

The high school participates in Let's Move Missoula!, and offers Brain Breaks for movement during the course of the day, along with significant outdoor physical activity programming. With help of a Plum Creek grant, the high school built a greenhouse, offering 1300 square feet of student-managed organic gardening, using

low-tech sustainable methods inspired by local farmers. The produce is used in the school cafeteria and scraps are carefully composted.

Seeley-Swan offers a Geography of Food class, conducts field studies in science, and encourages nature journaling in English. The geography class works with second graders at nearby Seeley Elementary, planting gardens and working on composting. The Seeley Swan English teacher required a semester-long sustainability-focused writing project. Algebra students collect data on each classroom's use of lighting, noting whether lights were on in empty rooms and whether teachers were taking advantage of natural light and turning off overhead lights. Students analyze the data and, by means of a clever game show format, present findings to the entire student body at an assembly.

Each year, the outdoor club provides three full-day learning experiences in which students are taken to wilderness areas for environmental and outdoor education. Students worked on a stream restoration project, moving beyond the monitoring of the waterway to stocking the stream with fish. Students also record data from a sensitive bull trout spawning area, and the data informs the U.S. Forest Service and watershed groups' policies.

Seeley-Swan continues to partner with the University of Montana, the U.S. Forest Service, and various other community-based organizations, such as the Clearwater Resource Council, to reinforce the value of personal, social, and environmental responsibility.

Nebraska

Edward Babe Gomez Heritage Elementary School, Omaha, Neb.

Acclaimed outdoor classroom offers active adventure to a generation of environmental stewards

The community of Gomez Heritage realizes how vitally important it is that children grow up to be the next generation of environmental stewards. They realize that the best way to protect the future is to maintain a healthy staff and student and parent body.

Gomez Heritage was designed as a state-of-the-art teaching facility with an emphasis on blending into the natural landscape. The school uses up-to-date technology including three specialized technology labs. The building design also includes a geothermal well field and extensive use of natural light. There is such an abundant amount of natural light that the school is able to implement Lights-Out days. The cafeteria's recycling program has served as a model for the school

district, helping other schools to implement their own effective cafeteria recycling programs.

The school's nationally accredited Jan Gilbert Memorial Outdoor Classroom and Timberwolf Park are used by every student throughout the year. This outdoor classroom construction began with a unique partnership with the surrounding farming community. This partnership enabled the school to create an alternative educational setting for students. This classroom provides a multi-sensory approach to learning, with open-ended activities that can be adapted to children's individual interests and needs, empowering them to become problem-solvers and critical thinkers. This outdoor classroom is a place of pride for the school, parents, and community, with parents playing an integral role in establishing the space. The community made sure that mulch was laid, native trees, grasses and flowers were planted, stations were built, planter beds raised, bird houses were constructed, and stepping stones and benches were designed.

Gomez Heritage has 13 raised beds that students use to grow fruits, vegetables, and herbs. Employees from Wells Fargo Bank helped with the fall harvest, creating an opportunity for a school/community connection. Wells Fargo provided Gomez Heritage with a master gardener from the State Extension Office.

A six-year partnership with Nature Explore has been vital for the development and success of the nationally accredited outdoor classroom. Nature Explore provided Gomez Heritage the opportunity to work with a certified design consultant and several thousand dollars in start-up funds. Nature Explore staff spent over 60 hours designing and working with the school's administration. Thanks to this unique partnership, Nature Explore endorses Gomez Heritage's principal, John Campin, as a reference to assist with outdoor classrooms throughout the country.

The school's Dads of Great Students (DOGS) club helps with campus clean-up projects and the yearly can drive, along with the Student Leaderstars. The money raised goes to the expansion of the outdoor classroom. The DOGS also assist in the classroom to build positive relationships with students. In addition, every week the Super Moms club can be seen collecting recyclable material from all classrooms and offices. The Super Moms also organize recycling for the end of the year picnic celebration, and deliver produce to classrooms for the fresh fruit and vegetable program twice a week.

The school nurse, social worker, counselors, and school psychologist work closely with families to provide services. There also is a close partnership with numerous community-based health organizations. Family room liaisons play an important role in this process. The school nurse presents curriculum to fourth-grade students in human growth and development and health care, and performs health screenings for

all students. Creighton University Medical Center provides dental screenings and follow-up.

All students are eligible to receive a free breakfast every day. The Gretchen Swanson Center for Human Nutrition is a partner in actively promoting farm to school activities. Gomez Heritage participates in the Woodhouse Backpack Program. Based on parent income, select students are given healthy food for the weekend. Students participate in cooking classes using produce from 12 garden planters.

Biweekly physical education classes give students the opportunity to participate in numerous recreational sports to promote physical, mental, and social well-being. A blacktop area with soccer goals and basketball hoops and a playground equipped with climbing, crawling, and jumping equipment, as well as access to jump ropes, various balls, and sport equipment support fitness at Gomez Heritage. A schoolwide weight loss program, Zumba classes, and yoga classes are offered to parents and staff.

The Jan Gilbert Memorial Outdoor Classroom provides many skills simultaneously. Construction, engineering, kinesthetic, visual-spatial, and math literacy are all critical components of the outdoor classroom curriculum. Estimating, symmetry, geometry, angles, measurement, and fractions are math concepts included in the outdoor curriculum.

The science curriculum standards at Gomez Heritage enable students to make connections with the natural world and the engineered world. Through structured lessons and projects, students recognize ways in which individuals and families can conserve Earth's resources. The curriculum includes the study of ecologists, environmentalists, zoologists, and biologists, exposing students to a plethora of career paths.

Gomez Heritage students are learning their important role in the preservation of our earth. The school's philosophy is that learning is an active adventure and, without continuous hands-on experiences, it is impossible for children to acquire a deep, intuitive understanding of the natural world that is the foundation of a sustainable environment.

Wilson Focus School, Omaha, Neb.

Focusing on fitness and fresh foods in the heartland

Wilson Focus School (WFS) is Nebraska's first focus school of the Learning Community, a political subdivision for education in Nebraska's Douglas and Sarpy counties. WFS is a school open to students living anywhere in the boundaries of the counties' 11 school districts. Extra value standards for the school were written to emphasize Leadership through Technology and Communication. Diversity, extended-day learning activities, and an extended calendar are a few features that set this school apart.

WFS placed first in Nebraska in 2011 in the nutrition and fitness program Fuel Up to Play 60, in which students track nutrition and exercise. Enrichment classes offer many physical activities such as tap dance, jazz dance, hip hop, yoga, outdoor sports, playground pals, Taekwondo, archery, and walking and biking clubs. The school has received a Bronze Award from USDA's HealthierUS Schools Challenge and participates in the Let's Move! initiative.

There are 11 raised garden beds, and each third-, fourth-, and fifth-grade classroom is responsible for one garden bed. The produce is used in cooking enrichment, science classes, and school lunches; distributed to take home; and even sold by the garden club. These garden beds have helped the students learn about erosion, water conservation, the engineering of construction, and math skills in consideration of depth and measuring.

The school also has rain barrels used to water garden beds, and 55 gallon and 35 gallon aquariums to water the landscaping plants. A large compost bin helps students learn how nutrients from organic waste can cycle through the environment. Students are part of a team that gathers recycling from around the building. During lunch, students separate and sort items as well. WFS participates in Omaha Public Schools Green Schools initiative. It has received ENERGY STAR recognition every year from 2012 to 2014.

Within the climate and culture standards for social studies, students learn agricultural practices of various regions and how people in other cultures interact with their environment. They study the long-lasting effects of pollution within their science courses, and use math and graphing skills to document trends over time. In reading classes, nonfiction selections relate to the environment and renewable energy.

WFS partners with Camp Kitaki to send sixth-grade students to two days of outdoor education full of learning activities, including visiting a pond, lake, canoeing, GPS hiking, astronomy and rock climbing.

Lincoln Public Schools, Lincoln, Nebraska

Linking health and achievement leads to a cultural shift

Lincoln Public Schools (LPS), which has a 27,879 student enrollment, 44 percent of whom are eligible for free- and reduced-priced lunch and seven percent of whom are limited English proficient, keeps environmental impact and environmental health a central focus of its facilities and maintenance program. IEQ issues are addressed by a team specifically dedicated to investigate and remediate problems that develop, and perform regular inspections to preempt as many issues as possible. The district has won several EPA IAQ and IPM awards. On the design and build front, architects use LEED for Schools Silver as a reference. The team works to minimize energy consumption and costs by implementing geothermal heat exchange and energy recovery systems in all new facilities as well as in the renovation of existing facilities. The district uses ENERGY STAR Portfolio manager for its buildings and has an average rating of 93. LPS received a $150,000 grant from the EPA to retrofit its bus fleet with diesel oxidation catalysts.

In addition to a comprehensive recycling program to minimize the waste stream of ongoing school operations, during construction and renovation LPS reuses and recycles construction waste. More recently, LPS has begun a composting pilot program aimed at further reducing solid waste at school facilities. The district works closely with other state and local authorities to properly account for potentially hazardous materials that must be disposed, from e-waste to building components to science and custodial products.

Another strength of LPS is the district's efforts to improve student and staff health. Highlights of the wellness program are combined staff and student fitness challenges; exploring the interrelationship among academic success, fitness, and obesity; and engaging wellness champions from each school to promote communication and the sharing of best practices. The connection between aerobic fitness and increased standardized test scores was made in LPS after dissemination of a study published in The Journal of Pediatrics in 2013, titled "Evidence that aerobic fitness is more salient than weight status in predicting standardized math and reading outcomes in fourth- through eighth-grade students." These findings led to a cultural shift among district leadership with regard to the link between academic success and fitness, with a focus on encouraging best practices to be shared, and a

subsequent decrease obesity rate for four years running. LPS has engaged area businesses in their health challenges. Additionally, the district has been involved in regular features on the local news and hosting the show "Simple Choices" on the Mayor's Health Channel, as well as "In the Kitchen with Michelle" segments on nutrition education. Over the years, among its schools, seven gold, 20 silver, and seven bronze HealthierUS Schools Challenge recipients have been named. The district participates in Fuel Up to Play 60, offers school gardens, and is moving toward more organic and local foods in cafeterias.

Many innovative practices and partnerships ensure LPS students experience environmental and sustainability education at all grade levels. Kindergarten through fifth grade students receive instructional units in plants, seasons, animals and habitats, soil, prairie, ecosystems, water, and wetlands. In grades six through eight, students have environmental science and living organisms units. In grades nine through 12, biology and geoscience courses are required for all students. High school electives include marine biology and environmental studies. Additionally, the Science Focus Program offers some high school students the option to play a more active role in defining their learning environment, including authentic learning experiences through environmental projects.

Teachers receive district support for professional development in environmental and sustainability education. Supported options have included Nebraska Game and Parks Project WILD training sessions, the Prairie Pines Nature Hike, and the Nebraska Alliance for Conservation and Environment Education fall conference. LPS' most recent innovative partnership brings together Lincoln Public Schools and Southeast Community College to begin The Career Academy in 2015-2016. The Career Academy will offer high school students a choice of 16 career pathways including Agriculture/Bioscience. During the two-year course sequence of Agriculture/Bioscience, as many as 48 students will take a course being developed based on the Nebraska Department of Education Introduction to Agriculture, Food, and Natural Resource Systems, which will include standards on the management of soil, water, and habitat. The district also offers Project Lead the Way courses.

New Jersey

William Davies Middle School, Mays Landing, N.J.

A ripple effect spurred by a windfall is changing the world

William Davies Middle School (WDMS) is one of three schools in the Hamilton Township School District in Mays Landing, New Jersey, with 980 students in grades six through eight. As a Title I school, 52 percent of students receive free and reduced-price lunch. WDMS is one of the largest middle schools in New Jersey, but

the school's reach is well beyond state borders thanks to the use of social media. In turn, WDMS has the opportunity and the responsibility to inspire thousands of individuals both within the community and around the world.

The quest to implement an effective sustainability program began five years ago when WDMS applied for, and was awarded, the Talent 21 Grant Initiative. As a result, every single student at the WDMS was given a netbook. This tremendous opportunity motivated the staff to rewrite the curriculum to use this technology not only to create 21st-century learners, but also to create young environmental stewards. WDMS has created and implemented schoolwide, cross-curricular project-based learning methods focused on sustainability.

For example, sixth-grade students hear from speakers from the Atlantic County Utilities Authority and create projects demonstrating how they are reducing their carbon footprint. Their art projects on endangered species are exhibited at local mall for shoppers to vote on a favorite. Seventh-grade students focus on water conservation via their annual Walk for Water. This event functions, in conjunction with the help of PlanUSA, to raise money to place wells in Ghana. Now, as almost a rite of passage, eighth-grade students participate in an annual Green Career Day, which offers presentations from local sustainability-minded companies.

Environmental curriculum transcends WDMS, as stakeholders have extended their passion for sustainability far beyond the classroom walls, into the community and world. Green Day at WDMS serves as a living testament that a positive vision and common goal can unite people around the world. Environmental literacy projects are not limited to singular events. Students research and investigate sustainable agriculture. They rewrite job descriptions to reflect environmental changes and demands. The school is an Eco-Schools USA and a Keep America Beautiful Recycle Bowl participant.

Teachers noted students' passions for sustainability in projects, and wanted to continue the momentum throughout the year. Thus, the environmental club has worked to garner fundraising and product donations to create an outdoor learning space. In pursuit of this outdoor learning space, WDMS has created meaningful relationships with local businesses, nonprofit groups, utility companies, and colleges. Now students benefit from vegetable garden beds, a greenhouse, a koi pond, rain barrels and a drip irrigation system, and a butterfly garden, all of which serve as a place to appreciate, take care of, learn about, and enjoy the fauna and flora of the local community. For many of the students, these outdoor habitats are their only exposure to these types of plants and animals. Cultivating a love for environment through personal experience has been an integral part of implementing an effective environmental program at WDMS.

WDMS is a pioneer in reducing environmental impact and costs. The installation of solar panels generating some 14 percent of the school's energy usage resulted in significant savings, and doubles as a learning opportunity for students to study the benefits of solar energy. Moreover, WDMS partnered with the Richard Stockton College of New Jersey to obtain an extensive energy audit for the school, which will encourage WDMS to increase focus on energy management and reduce its carbon footprint.

The WDMS staff and students take ownership of sustainability and their part as global citizens for future generations to come. They recognize the importance of uniting under one common goal and using this momentum to create a ripple effect, beginning with the individual in hopes of changing the world.

East Brunswick Vocational and Technical High School, East Brunswick, N.J.

Green career pathways and project-based learning that benefits the community

The East Brunswick campus of the Middlesex County Vocational and Technical Schools has been conscious about sustainability education for over seven years. The suburban school, serving 637 students, was constructed in 1969, yet through conscious conservation efforts the school reduced its domestic water use by 16 percent and energy use by 39 percent in just a year's time. The school contracted Johnson Controls, an energy savings company, to conduct an energy audit and subsequently implement retrofits. All maintenance issues are used as an educational opportunity; teachers diagnose problems with students in pertinent career paths.

East Brunswick participates in New Jersey Green Program of Study, sponsored by the New Jersey Department of Education, to offer three designated sustainable pathways: sustainable architecture and design; green construction; and energy for a sustainable future.

The school started with a sustainable courtyard project. As interior courtyards had become overgrown and unappealing to the eye, the school collaborated with several career majors — architectural technology, carpentry, HVAC, agriscience technology and welding — to create a beautiful space. The students started by clearing the brush and removing overgrown vegetation, and built walkways using reclaimed wood planks to give the student body access through the courtyard. Students also dismantled two trailers and recycled the wood and metal. The welding students made two metal frames for bridges. The carpentry students created two completely

recycled bridges from reclaimed wood. Upon completion of the courtyards, East Brunswick was contacted by Woodbridge Township to assist with the Green Museum, which began East Brunswick's mission to educate students and staff about sustainability and using reclaimed products in career majors.

Agriscience students built a groundwater containment pond to enable instruction of various aquatic species. East Brunswick's cosmetology students offer a well-received annual event during which homeless residents of the county can receive beauty services. Students provide shampoos, haircuts, beauty tips, and grooming to community members struggling with living conditions and financial hardships. Culinary arts and Future Farmers of America projects also benefit the community.

East Brunswick is a Weather Bug School and makes use of Curriculum for Agriculture and Science Education (CASE) and Trout in the Classroom. The school's Green Technology Exposition included projects such as organic dry cleaning and a dance department video about trash vortex in the ocean.

A recent project is a school garden. Agriscience career majors met with local farmers to discuss East Brunswick's groundhog issue. The students planted raised beds and experimented with different herbs to keep the pests out, but the groundhogs were still winning the war. Students consulted several local farmers, who determined that the garden needed to be fenced. Once the groundhog issue was under control, the farmers helped students learn about proper soil nutrition, crop rotation, and garden maintenance. Students have built compost bins using reclaimed material, and have created a secondary interior vermiculture compost bin where food scraps from culinary are used for compost. For the winter months, the students built cold frames to grow kale and spinach for the culinary arts department, and herbs are grown in the hydroponic system in the school's Green laboratory.

East Brunswick was awarded a Coordinated School Health Grant from the New Jersey Department of Health. East Brunswick made it a priority to promote student and staff health in the school. It added a salad bar, switched Styrofoam lunch trays to reusable trays, and began to offer more seasonable fruits and vegetables. The food service provider changed food vendors to limit the distance the food had to travel. East Brunswick meets with Rutgers University representatives and Food Corps members to participate in the urban farm market in New Brunswick. The school also promotes mental health through collaboration with the Middlesex County Department of Homeless.

Next was the launch of a running club to promote fitness. East Brunswick started with five students and three staff members, who ran after school and in a half marathon. The club gained momentum and transformed into a varsity cross country team. To promote the mission even further, East Brunswick school now hosts a five-

kilometer run in honor of a deceased graduate. The staff and student body, along with the community, have embraced East Brunswick's mission of health and fitness.

Timber Creek Regional High School, Erial, N.J.

Over 58 percent of campus energy is solar-generated

Timber Creek Regional High School, a suburban school serving 1,329 students, is invested in environmentally responsible actions and behaviors that lead to greater environmental and ecological stewardship and a reduced carbon footprint. The Black Horse Pike Regional School District as a whole, and Timber Creek as a school, have an operating green team consisting of students, administrators, teachers, and community leaders that work toward identifying energy inefficiencies and waste reduction possibilities, and preventing the use of excess water and electricity. The green team commits to changing behaviors, practices, and products that lead to greater efficiency and result in responsible and sustainable environmental stewardship.

Timber Creek has a pronounced reduce, reuse, and recycle expectation, and has emphasized a composting and single-stream recycling program throughout the school, which is reducing the amount of materials ending up in landfills. Composting is collected by Organic Diversion, a company that coaches the students and staff on how to collect materials, and provides the school with reports on collection quantities and strategies to improve composting and recycling efforts. The compost is also used in the science curriculum, where students examine it for microbes and decomposition rates.

Over the course of the last three school years, Timber Creek has realized a reduction in utility costs due to the installation of high-efficiency lighting, changes in refrigeration practices, establishing wiser heating and air conditioning practices, shutting off lights and computers when not in use, and structuring more responsible irrigation practices. As a result of the shift in behaviors and energy efficiency upgrades, Timber Creek has mitigated climate change by reducing GHG emissions by 70 percent in three years. Over 58 percent of the school's energy usage is produced onsite with a 1.3 megawatt solar array.

Timber Creek has improved IAQ by discontinuing the use of chemicals used to strip flooring and installing filters with a minimum efficiency rating value of eight in HVAC systems. The school's wellness coordinator organizes biometric screenings and conducts health risk assessments for various organization personnel. The wellness coordinator also establishes weekly goals for individual staff members relative to

improving overall health, helps staff improve health choices, and establishes workout regimes. Students participate in a minimum of four 45-minute physical education classes per week, and the Health and Physical Education Department welcomes guest speakers throughout the year.

Timber Creek has an organic garden, which was procured and supplied with plants nurtured from seeds in greenhouses located at two sister high schools in the school district. The organic garden was created from the vision of the green team in the spring of 2013, and designed and constructed by students and staff. It is a raised-bed design, constructed from untreated, repurposed solar panel wood shipping boxes. The garden is supported by a 300-gallon off-grid rain collection system that collects roof rainwater and uses a 12-volt battery recharged with solar to power a pump with a capacity of four gallons per minute. A patio and entranceway were built to accentuate the beauty of the space and to welcome all to the gardening experience. Garden produce goes to the cafeteria, local food banks, and community senior centers. Fifty yards away, on the other side of the school science wing, is a Rutgers Cooperative rain garden and bioswales installed in 2008. The rain garden and organic garden are maintained by the environmental club and the green team during the school year, and by the Special Education Multiply Disabled students in the End of School Year program.

Students are required to have discussions and answer questions about sustainability. In chemistry, topics include solar cells, nuclear energy and environmental chemistry, GHGs and how they contribute to global warming, alternative energy sources, and the hydrogen fuel cell and biofuel. Students learn about nutritional concepts, food contamination, organic foods, healthy food choices, and composting in the nutrition, culinary, and hospitality courses. Food-based classes use the food grown in the organic garden. In Environmental Science, the climate unit treats GHGs and climate change according to a framework of natural climate change, evidence for past climate change, and current observations with implications for the future. The energy unit covers fossil fuels and an evaluation of alternative energy sources. Biology classes address the relationships between resource use and sustainable development and how humans impact the diversity and stability of ecosystems. Art students use trash, newspapers, recycled materials, drips of paint, and found items to create sculptures and paintings. Engineering students create cardboard chairs, cranes out of recycled materials that hold as much weight as possible, and robot chassis from repurposed pallet wood.

Timber Creek offers opportunities for staff sustainability professional development. Teachers attended the New Jersey beekeepers annual meeting, a Wetlands Flow Institute Training sponsored by NOAA, AP Environmental Science trainings, and districtwide green team meetings.

The green team students lead efforts beyond the school walls to take action in local and global environmental crises. For instance, the students take part in the Thirst Project, which collects money to establish a freshwater well in historically malnourished areas of Africa. Students also participate in the Envirothon Competition, Project GLOBE, and the 5K for Clean Air.

Princeton Day School, Princeton, N.J.

EnActing environmental change on campus and at home

Princeton Day School (PDS) has demonstrated both quantitatively and qualitatively its dedication to environmental sustainability and real change over the past decade. This coeducational prekindergarten through 12th-grade private day school for 900 students boasts a green team composed of faculty, staff, administrators, and students from all departments and divisions. PDS has created a Green Panther Certification Award for classrooms and offices to self-monitor behavior based on environmental indicators and questions. Simultaneously, PDS is creating a Green Panther Home Award for families to implement these conservation behaviors in their own homes. PDS has a specific Parent Association committee to help bring sustainability into students' homes.

Ecometrica performed a quantitative GHG assessment on the entire PDS campus that quantified the school's emissions and launched a line of facilities changes that created a demonstrable decrease in environmental impact in the time since the assessment was performed in 2011. PDS has a fully transparent bill system that allows for tracking of the consumption of all forms of energy on a monthly basis. The students performed a GHG assessment in 2013 and 2014 in partnership with students from nearby Princeton University. PDS has had sustainability guidelines for building and grounds passed by the Board of Trustees. PDS has installed CO2 sensors, passive solar harvesting lights, occupancy sensors, low-flow toilets, water bottle refilling stations, high-efficiency boilers, double-pane high-efficiency windows, and a building control system. PDS has composted over 80,000 pounds in the last four years.

During the school's most recent accreditation evaluation, one of the faculty's self-chosen goals was incorporation of environmental stewardship into the curriculum. In this effort, PDS created sustainability rubrics for curriculum, had faculty in-service days on sustainability, created an annual Barn Week during which lower school students learn animal stewardship, and integrated garden education into the health and wellness initiative in all grades. PDS runs an annual Harvest Dinner -- now in its sixth year – during which high school students prepare local and organic food for

250 families and teach about its importance. PDS has a physics course on energy; a history course on oil; an English class on food, sustainability, and writing; a compulsory sustainability course for all sixth graders, and required outdoor garden classes for all P–fourth grade students that involve a 50 x 150 foot organic garden.

PDS has implemented sustainable dining practices. There is an outdoor kitchen and classroom for the use of the entire school community. No disposables are used in the school's dining or catering, all food is cooked from scratch, the school uses 19 percent local food, and the school hosts "Healthy Me, Healthy Planet" Tuesdays featuring foods high in nutrition and low in carbon footprint. All food other than dairy and meat is composted. As a result, PDS has become Green Restaurant Certified at the three star level.

In October 2013, PDS offered a workshop in school garden design and curriculum reform for 40 New Jersey public and independent school teachers. The school's sustainability coordinator and garden coordinator present regularly at conferences, and have worked with scores of other schools who have come to PDS for advice on making grounds more sustainable teaching tools. PDS runs environmental summer camps open to the public.

The high school's very active Environmental Action Club (EnAct) organized environmental issues conferences titled "Our Future, Our Challenge" in 2011 and in 2012, inviting all high school students in Princeton Day School, with over 100 students from public and independent schools participating each time. EnAct partnered with the Princeton Environmental Film Festival to create the 2012 and 2013 Next Generation Fairs, in which 18 New Jersey schools participated, and resulting in EnAct winning the Youth In Focus Award. In 2004 and 2005, EnAct organized the Walk for Open Space, raising over $50,000 each year for local environmental organizations. At the end of each school year since 2009, EnAct has organized The Great Give Away, a zero waste locker clean-out event in which all students collect gently used school supplies to donate.

The theatre program and EnAct partnered to promote sustainability education through the 2014 stage production of Urinetown, earning the 2014 Paper Mill award for education. Since 2013, the theater program has committed to creating zero waste productions, meaning all sets are made from recycled materials. PDS has had several environmental community service days; for example, four times in the last decade 100 PDS sophomores spent the day at Mountain Lakes nature preserve engaging in restoration efforts. For many years, students have maintained the part of the local Princeton Green Trail that runs through the PDS campus. In 2009, the entire school worked together to win the national Green Schools Alliance Green Cup Challenge. The prekindergarten through 4th-grade classrooms all have a

designated sustainability student leader, and invented a green/red magnet system to save electricity.

North Carolina

Chapel Hill-Carrboro City Schools, Chapel Hill, N.C.

Sustainability as a guiding principle

The Chapel Hill-Carrboro City Schools (CHCCS) Board of Education recognizes sustainability as a guiding principle and believes that the district should be committed to developing and integrating sustainability practices in all aspects of the education system. As stated in board policies, sustainability efforts balance the interconnected areas of education, environment, society, and economy to contribute to a healthy future for students, faculty, staff, and community. The Board believes that these actions are a natural extension of the district's core mission and values. Showing this commitment, the district is developing a formal relationship with Eco-Schools USA.

CHCCS, with 19 suburban schools serving 12,134 students, is committed to the integration of environmental sustainability throughout the entire district. In November of 2014, the district hired a full-time sustainability coordinator. The sustainability coordinator is within the facilities department, and works closely with both the maintenance team and the district academic coordinators. The sustainability coordinator identifies opportunities within the district that have a combination of positive environmental, financial, and academic effect. The positioning of the role enables the sustainability coordinator to implement facilities-based projects and link them to classroom experiences, while showing the financial implications of such projects.

CHCCS has developed further infrastructure to prioritize sustainability throughout all levels of the system. The district sustainability committee consists of teachers, parents, students and administrators, representing each school as well as community partners. The committee prioritizes sustainability projects, shares best practices, and plans implementation of sustainability programs in each school. All district employees are expected to support sustainability as guided by the Board of Education's Policy 1810: Sustainability. Twenty-five percent of schools have solar thermal to preheat water and four have demonstration solar arrays. The district includes LEED Platinum and LEED Silver facilities.

An example of the interplay between facilities and learning can be seen in a lighting retrofit of two CHCCS facilities in 2014. The district replaced all metal-halide exterior lights with LED fixtures. With a payback period of just over two years, the lights provide greater safety for the school, save $3,800 annually in operating costs, and reduce CO2 emissions by 26 tons annually. As part of the project, the sustainability coordinator visited classes within the district using a pedal-power generator and a three-bulb lighting demonstration, including incandescent, fluorescent and LED bulbs, which enabled the students physically to feel the difference in energy needed to power each lamp. On a larger scale, the district has committed to energy audits of each building to identify efficiency opportunities and is committed to efficiency in all new construction and retrofit or renovation projects.

The district has implemented a waste reduction program that has had significant effect. By analyzing waste streams and acting on data, CHCCS has been able to reduce expenses on landfill waste by $34,000 annually (33 percent), diverting 210 tons from the landfill through sorting practices, including a districtwide composting program. The composting program alone diverts approximately 113,000 pounds of waste from the landfill. As a result of these efforts, and signage created by high school art students, cafeteria landfill waste has been reduced by 88 percent (going from 155 bags a day down to 18).

Student and staff health is a central focus of the district. The district's coordinator of healthful living and athletics oversees physical education staff and works closely with the food service provider and nurses to ensure a holistic vision and implementation of student and staff health. School gardens, walk and bike to school programs, family marathons (26.2 miles between all family members), staff workout rooms, and nutrition education are signs of the district's commitment to student and staff wellness. CHCCS has received Alliance for a Healthier Generation Bronze awards and all elementary schools in the district have been recognized at some point with USDA HealthierUS Schools Challenge Bronze.

Both the sustainability coordinator and the coordinator of healthful living and athletics work with the food service team to implement healthy eating options and nutrition education, relationships that are formalized through the Healthy Schools Advisory Council, which is made up of representatives from each school's wellness team. These meetings are used to share best practices, introduce new initiatives, and build on the strength of ongoing programs. In addition to these nutrition and fitness efforts, the district has transitioned all cleaning supplies to green-certified, and is diligent about maintaining facilities so that they provide healthy places for students and staff to learn.

Going beyond operational level sustainability efforts, CHCCS ensures that sustainability education is integrated into curriculum. The sustainability coordinator

works closely with the district's science coordinator to integrate sustainability concepts into curriculum-based standards. CHCCS is developing curricula that use buildings as learning tools. Elementary students have explored green roofs, mechanical rooms, and gardens and discussed how these elements affect the environment and learning space. They have investigated the technology in lighting equipment and placement of windows throughout the building to understand efficiency and natural processes. Students have completed similar building investigations in older facilities, so students and staff can learn to identify opportunities, not just learn about solutions. This process has facilitated students' critical thinking, as well as their application of environmental logic to their surroundings. The district and its students and staff have taken home awards from White House Champions of Change, the Lexus Eco Challenge, and Siemens We Can Change the World.

Cherokee County Schools, North Carolina

Making a big sweep of environmental education in the mountains of North Carolina

Cherokee County Schools (CCS) is a rural district located in southwestern North Carolina that consists of 14 schools and serves 3327 students. Over the past five years, the district has worked hard to improve the energy performance of schools, partnering with energy companies in making use of school lands for solar arrays, integrating curricula in environmental education with the help of 4-H, and improving the health and nutrition of students and staff. There is strong community involvement in these efforts, which allows the district's sustainability education work to reach both parents and the community as well.

From December 2008 through October 2014, the district achieved an energy cost avoidance of $1,821,336. The district partnered with ESA Renewables, LLC in the construction of a .999 megawatt solar array, which helps offset the cost of electricity for the district. CCS implemented changes in the management of heating and cooling systems, installed energy-efficient lighting with federal stimulus funds, made significant improvements in air quality, and is recycling through cooperative efforts with the county government and community centers. CCS understands the importance of benchmarking and tracking energy and water performance metrics. It uses both Portfolio Manager and Energy Cap software, and has received ENERGY STAR labels for 13 schools.

The health and wellness of CCS students, staff, and broader community has been a top priority of the district. Recognizing that proper health and nutrition results in increased student attendance and performance, CCS has implemented school

environmental health programs, sound nutrition education, and fitness programs. CCS has implemented a Healthy Living Standard course of study. Nutritious foods are provided to CCS students through the National School Lunch and School Breakfast Programs, which include fresh fruits and vegetables. All students in grades kindergarten through eight throughout the district receive free breakfast and lunch daily. Local products are used when available.

School personnel provide opportunities for physical activity during the school day. Schools must provide a minimum of 30 minutes of moderate to vigorous activity daily for kindergarten through eighth grade students. Physical activity is provided outdoors during physical education class or during scheduled recess time. Recess is always outdoors.

The Cherokee County Schools, through individual school programs, identify students with chronic health problems and special health care needs including asthma. Asthma triggers have been identified and eliminated or reduced to provide for healthier environments in all schools. Elimination of the use of aerosol sprays, control of temperature, elimination of dust and pollen through proper filter change in HVAC systems, and improvements to the air quality has helped those with asthma. In coordination with students' physicians, those with asthma are monitored to ensure prescribed medications are taken prior to physical activity and class recess to prevent asthma complications.

The schools have established a school health advisory council to help address health and nutrition issues and compliance with the Cherokee County Schools health policy. Health promotion is provided for staff in collaboration with school nurses, including health screenings such as blood pressure and body mass index when requested. Coordination with the local health department provides routine lab work and screening as needed for staff.

Environmental and sustainability education is recognized by Cherokee County Schools as an important part of student education. The district believes that students should develop the skills and attitudes necessary to understand the interrelatedness among man, his culture, and his biophysical surroundings. This philosophy is implemented in all grades through curricula-based programs, as well as throughout in-school and afterschool activities. Students are involved in recycling programs, studies of the district's solar farm, and composting projects. CCS has a strong partnership with a 4-H program that helps offer environmental education units in every grade, including wind energy, biofuels, water, verimculture, agriculture, and health topics. Students have built an arbor on a community river walk; removed invasive species; and work with the U.S. Forest Service for an annual "Big Sweep" waterway, lake, and stream trash cleanup during September.

Being educated in a rural area, Cherokee County School students have a field of study very conducive to environmental education. Field trips relating to environmental education include Nantahalia Outdoor Center, Ocoee Whitewater Center, Smoky Mountain National Park, and the Cherokee Reservation Oconaluftee Indian Village.

They also go to the Huntsville Space Center, Tybee Island Marine Institute's Ocean Outreach Center, and Young Harris College Rollins Planetarium. The Earth and Environment course of study occurs in all schools and at all grade levels. This course emphasizes importance of the soils, water conservation, and how urbanization can affect the quality of both.

Even though 65 percent of the students receive free and reduced-price lunch, there is a 91 percent graduation rate from the high school, one of the highest in North Carolina. This is supported by the outstanding environmental curricula, with a focus on STEM, high standards for maintaining the nutrition and health of students and staff, community involvement in the schools, and aggressive energy conservation and indoor environmental quality policies, which result in healthier, more cost-effective learning environments.

Ohio

Old Trail School, Bath, Ohio

Green energy and award-winning initiatives

Old Trail School is a coeducational independent day school for 520 students in grades prekindergarten through eight. Located in the heart of Cuyahoga Valley National Park, Old Trail has a long history of providing a comprehensive curriculum with a commitment to academic excellence, service learning and global sustainability.

Old Trail strives to reduce its carbon footprint while introducing students to their natural world through hands-on, collaborative science lessons, gardening, and habitat restoration. The school has created a model for school environmental sustainability programs, focusing on five major components: facility, food, operations, recycling, and water. Each of these is continuously evaluated by the administration, with a goal of improvement and direct connection to the curriculum.

The 62-acre campus allows the school to focus on place-based education. The school takes advantage of its unique surroundings by encouraging students, families, faculty, and staff to examine and explore the outdoors, using the campus as an environmental learning center.

Old Trail uses software to regulate the thermostat throughout the entire campus changed T-12 to T-8 and LED bulbs, installed HVAC automation and building motion sensors, implemented a behavioral change campaign, and uses extensive daylighting. It has installed a 320 kW/h solar array, includes an outdoor amphitheater, a UV-treated pool, and an impressive Living Machine that treats the school's wastewater completely through the use of natural resources. Housed in a greenhouse (the school's Living Classroom), the Living Machine serves as a laboratory for students as well as other schools and organizations in the region. In the Living Classroom, students perform water quality experiments and use a demonstration pond.

One hundred percent of produce served in the cafeteria is grown on campus. The Edible Education Program is led by four of faculty members who were trained by Alice Waters and her Edible Schoolyard Program. The campus is home to three honey-producing beehives. The school's curriculum includes: laying hens, an environmental education center, farm, composting and waste, cooking, farm curriculum, work with a regional food bank, public health, and meteorology. Old Trail hosts the Countryside Conservancy Farmers' Markets during the winter season and incorporates the Education for Sustainability Standards and Cloud Institute Curriculum.

Old Trail has formed partnerships with organizations including Cuyahoga Valley National Park, Conservancy for Cuyahoga Valley National Park, Countryside Conservancy, and Hattie Larlham Services for Adults and Children with Developmental Disabilities. The Cuyahoga Valley National Park is a wonderful neighbor and partner of Old Trail in a variety of programs implemented at the school. Hattie Larlham Services manages its working organic farm, Hattie's Gardens, on campus, providing farming instruction and service opportunities for students, who gain hands-on experience working on the farm planting or tending bee hives, and working with farm staff and their clients. The gardens provide 100 percent of the produce used in the school's kitchen.

Grades four through eight gain extensive experience working with Eco-Schools USA, which allows students on the school's Green Team to become familiar with a variety of sustainability initiatives and carefully monitor the school's environmental efforts. The Green Team is responsible for tracking conservation efforts and results that have been achieved by the school.

An entire issue of the school's periodical, the *Old Trail Magazine*, is devoted to sustainability on the campus and in the homes of the students. Members of the school's community, including parents and alumni, share about how they embrace sustainability.

Berea City School District, Ohio

Outdoor education program allows students to teach each other

Berea City School District (BCSD) has taken proactive steps to reduce environmental impact and operating costs; improve students' and staff members' health; and provide effective environmental and sustainability education through several focused initiatives related to operations, wellness, health, and environmental education.

The district has actively implemented strategies to reduce environmental impact, GHG emissions, waste production, and transportation energy use. Working with Cenergistic, the school district was recognized with the District Energy Stewardship Award for environmental stewardship including decreased carbon emissions and natural resource conservation. Grindstone Elementary School within the district has qualified for LEED Gold certification. The district has joined in the Clean Fuel Initiative, one of several steps that the transportation department has taken to use cleaner-burning, low-emissions high performance clean diesel. BCSD also had partnered with EcoChem Alternative Fuels to thoroughly clean its fuel storage tanks prior to the delivery of its supply of diesel. Other steps the transportation department has taken include more efficient bus routing and use of GPS monitoring system to increase efficiencies.

The district has instituted changes to reduce waste handling. In the past, the buildings and grounds department rented a 40-yard dumpster, used for all types of district garbage that was collected throughout the year. On average, the district would have sent up to six dumpsters of trash directly to landfill. Now, the district separates out general recyclables from refuse, and all yard waste is shredded and composted for use in the community garden.

The district was recognized in the USDA HealthierUS Schools Challenge at the Bronze level. The district is a long-standing partner of the world-famous Cleveland Clinic for several of its health initiatives, such as Eat Right at School District and Be Food Safe School District. Recently, BCSD launched a comprehensive wellness program that is incentivized through an online tool called Vitality, an interactive and personalized wellness program that makes it easy for staff to participate in health screenings, identify goals, and track wellness and fitness progress. In the 2012-2013 school year, BCSD made a commitment to increase the amount of physical education courses required in each grade. The ninth-grade fitness course, a requirement for all students, is an introduction to the foundations of physical education with emphasis on cardiovascular and core fitness training, water safety,

and lifestyle fitness activities. BCSD continues to refine the curriculum to incorporate and integrate the tenets of a well-developed health and physical education program.

BCSD has made a commitment to the students and community to provide authentic experiences to promote environmental and sustainability education for students and the greater learning community. Environmental and sustainability concepts are integrated throughout the curriculum in grades kindergarten through 12, and BCSD has developed educational programs and opportunities that promote conservation and environmental practices across grade levels. This includes specialized programs such as environmental clubs and environmental science courses. Camp Mi-Bro-Bri is a weeklong outdoor education program for all sixth graders. Coe Lake Outdoor Science Education is a Certified Wildlife Habitat and program through which high school students teach elementary students about the environment.

The environmental education curriculum is inquiry-based and pays particular attention to scientific practices including questioning, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations and engaging in argument, and applications based on evidence. Elementary students have meaningful outdoor experiences specific to their curriculum, usually investigative or experiential projects that engage students in critical thinking, problem solving and decision-making. Over 83 percent of BCSD students scored proficient or better on the state science education assessments in 2013.

Advanced course options provide curricula that demonstrate the connection between classroom content and college and career readiness, particularly to postsecondary options that focus specifically on environmental and sustainability fields, studies, and careers for the following courses: Biology, AP Biology, Physics, AP Anatomy and Physiology, Environmental Science, AP Environmental Science, Project Lead the Way Biomedical, and Pre-engineering. Project Lead The Way, in particular, is a rigorous and innovative STEM education curricular program offered through a Polaris and BCSD partnership.

Pennsylvania

Charles F. Patton Middle School, Kennett Square, Penn.

Building partnerships that guide learning and community consciousness

Charles Patton Middle School has been striving toward all three ED-GRS aims. In the area of reduced environmental impact and costs, Patton has installed HVAC systems with air changes, automatic temperature controls, solar arrays that power a

greenhouse, low-flow toilets and faucets, and a drip line irrigation system. Native plants and trees are planted around the Patton school building and the school has worked to shorten and reschedule school bus runs to be more efficient and reduce energy use. The formation of a district green team encourages students and staff to reduce, recycle, and reuse. Overall recycling efforts have steadily improved, and lighting has been updated to be more cost effective.

To improve the health of students and staff, Patton uses green cleaning products, reduces hazardous waste, and implements IPM. Crossing guards ensure the safety of the many students who walk from neighboring developments. A wellness committee focuses on the mental and physical health of students and faculty. Snacks sold in the cafeteria must not have sugar as first ingredient; they also must contain less than 30 percent fat, have less than 250 calories, and be of a single serving size. No soda or foods of minimal nutritional value are sold in the vending machines or in the cafeteria. Patton supports local farmers by purchasing locally grown produce, implementing the farm-to-table concept, harvesting and using vegetables from school gardens, and participating in healthy taste tests at all levels.

Ninety percent of grounds are devoted to vegetable and flower gardens, including 30 raised beds, a greenhouse, wildlife and native plant habitats, a solar array, composting, pervious trails, protected wetlands, and plantings by a local farmer who engages in annual crop rotation. Two outdoor classrooms provide space for learning in a natural environment. Students learn and observe nature and investigate vegetation and wildlife. High tunnels are a ten-minute walk away, and an accessible walkway to the high tunnels is being built of recycled composite materials. Science classes go outside regularly to explore nature, conduct experiments, learn about the growing process, water, and harvest. Physical education classes play a variety of sports outdoors when the weather allows. Orienteering classes teach students how to use a compass and calculate distance, as well as how to find an object using coordinates.

Teachers are provided with multiple professional development opportunities through the Stroud Water Research Center, Longwood Gardens, the Brandywine River Museum, and the Tyler Arboretum. Teachers participate in professional development opportunities addressing standards associated with the environment, energy, and ecology standards. A team of administrators and teachers attended the K-12 Energy Education Program (KEEP) through the Pennsylvania Department of Environmental Protection, where they learned about renewable energy sources.

Patton has a bee and garden curriculum, and teaches students about renewable and alternative energies, as well as water conservation and quality. Science and geography classes embed activities that require students to reflect and evaluate connections between the physical environment and human activities, such as a

school lunch investigation project to measure waste. Students calculate their ecological footprints and the effect of human activity. They investigate the impact and develop problem-solving solutions to local and global issues. Eighth graders choose an environmental project for the school or their community. Field trips to sites such as Stroud Water Research Center teach students about water conservation and the environmental impact water can have on local streams and rivers.

Partnering organizations provide support through grants, donations, time, and materials. A local environmental architectural firm provides STEM funding. A very meaningful affiliation is with the Chester County Food Bank, through which students learn the importance of growing, eating healthy items, and helping the food-deprived. Longwood Gardens National Institute for Garden-Based Learning showcases Patton gardens to other schools. Tri-M donated a solar array to power the greenhouse that not only reduces electricity costs for the district, but teaches Patton students the benefits of using renewable energy through an interactive dashboard. Patton partners with local farmers, beekeepers, and Whole Foods, among others.

Northampton Community College, Bethlehem, Penn.

An entire campus built to green standards

Located in northeastern Pennsylvania, Northampton Community College (NCC) is a public two-year institution offering over 100 credit and noncredit programs to more than 30,000 students each year. NCC's Statement of Values speaks to the school's "commitment to the long term health of the institution, the community, the economy and the environment."

NCC's Monroe campus is the foremost example of this commitment, embodying the school's focus on reducing environmental costs and impact. It is the first college campus constructed entirely to meet Silver LEED certification. Building placement was limited to meadow grass areas, poor soil areas, and rock outcrop. Excavated rock was processed onsite into stone for base improvements. Buildings flow with the natural land contours. Floor-to-ceiling windows made of high-performance glass maximize southern exposure and natural light. Native vegetation reduces storm water runoff. The 205,500 square foot campus is four times larger than the NCC's original site, but incurs energy costs of only $87,000 a year due to geothermal system, high-efficiency HVAC and lighting systems, and a solar canopy that provides about 40 percent of the campus electricity. A digital metering and monitoring system provides real-time energy performance information.

NCC's main campus offers further examples of how good environmental stewardship intertwines with improving health and wellness and offering strong sustainability education. Here, 40 acres of unused, wooded, and grassy land are now a living laboratory. School leaders have worked to reduce the effect of mowing and grounds maintenance by allowing a portion of the land to go to succession, over time increasing the amount of wooded area on campus. A community garden known as the East 40 connects gardeners from the college and the community for service learning, sustainable gardening, ecological awareness, and healthy living. Biology students conduct flora and fauna inventories, and Irish Literature students plant crops to learn about the value of land ownership in the context of 19th century Irish land laws. Culinary students practice farm-to-table cooking strategies and participate in composting. Northampton programs empower community members to grow their own food through the availability of individual garden plots and community education; create opportunities for partnerships with area schools, food banks, and nonprofit organizations; promote environmental and spiritual well-being; and maintain the integrity and health of the land.

NCC's walking trails, outfitted with mileage and directional signage, encourage walkers and runners throughout the year. Both campuses feature state-of-the-art fitness centers with personal training. Faculty and staff have free access to credit and noncredit fitness courses. The Health and Wellness Center provides first aid treatment, health counseling, and programming to students. A faculty and staff committee dubbed the Wellness Warriors encourages coworkers to adopt healthy lifestyles by sponsoring wellness seminars, cooking demonstrations, and a walking program.

From an academic perspective, the college's environmental science associate's degree prepares students for careers in wildlife conservation, resource management, law, and human ecology, and courses inspire students to begin making a difference right away.

Following a lecture on plastic pollution, students began a movement to reduce, and eventually eliminate, the use of disposable plastics in food services. STEM faculty members have used federal EPA grants to partner with a local community supported agriculture program and an avian research center and to provide experiential learning for Monroe students. In 2015, NCC's National Endowment for the Humanities-funded programming, called Agriculture and the American Identity, is exploring how U.S. culture is evolving and food relationships are re-localizing, through an examination of food, who grows it, and how and where it is grown and consumed. Also new in 2015 are the school's single-stream recycling, community garden, designated parking spaces for low-emission vehicles, and campuswide reduction of printer-paper use. In short, environmental education leads to action at Northampton.

Rhode Island

Paul W. Crowley East Bay Met School, Newport, R.I.

A sustainable new building and blossoming partnerships for a beautiful world

The Paul W. Crowley East Bay Met School (Met) is a place-based learning environment in the field of sustainability and energy production. The school is recognized as a local and regional leader in environmental advocacy, with a slate of activities in process, including recycling, experiential learning in the environment, and watershed monitoring. The 151 Met students, over 66 percent of whom are eligible for free and reduced-price lunch, work alongside local environmental organizations as volunteers and interns in order to enact positive change in their communities.

In January 2014, Met moved into a new building, constructed by Gilbane Building Company. It was built using construction processes and materials that reduce environmental impact, the facility features green technologies, such as geothermal, solar thermal, and photovoltaic systems. The facility was designed to reduce water usage by more than 20 percent, and 50 percent of the construction waste was recycled or redirected. Materials used in construction were low-emitting VOC products, daylighting is incorporated into lighting controls, and air-sealing barriers were used in construction. Filtered water bottle filling stations note the number of plastic bottles saved, and extra-porous pavement, a water retention pond, and a rainwater harvesting system are used to avoid directing runoff to sewers. Fifty percent of students ride public transportation.

In addition to the green building design, the school administration and school educational staff have taken measures to ensure the health and safety of its students. Some examples include contracts with a professional pest control companies that use procedures and materials that are safe for occupants and environmentally responsible. All procurements are managed by the school's business office in a manner that regulates the types and quantities of chemicals being purchased. The school also holds a contract with an HVAC contractor to conduct monthly, quarterly, and yearly preventive maintenance, system inspections, filter changes, and system monitoring. Cleaning products used are 100 percent certified green. The building is Collaborative for High Performance Schools – Northeast v 2.0 certified).

Met's nutrition and fitness initiatives include advisory-based activities such as hiking, canoeing, kayaking, rafting, visiting trampoline parks, and swimming. Students also

intern with fitness-related Sail Newport, the U.S. Navy's Recreational Center, Narragansett Surf and Skate Shop, Core Fitness, Newport Equestrian, and Bike Newport, among other organizations. Annual schoolwide activities include students versus staff athletic competitions and beach and mountain bike days.

Met has a school-based chef who prepares healthy meals and offers free lunch to all students. The chef, along with a parent group, leads a student food group, which teaches students to prepare healthy meals at home. Met has built raised beds for student and community gardening. The school offers a coordinated school health approach, including mental health services and school climate programs through counseling and student-initiated learning opportunities, as well as by collaborating with community organizations, including hospitals and mental-health providers. This covers such areas as nonviolence, stress management, meditation, substance abuse, student voice and leadership, individual and group counseling, the mind-body connection, social skills, and communicating emotion through arts.

Met's mission is to educate and empower youth through relentless commitment to student-centered learning and personal growth. The school has made a commitment to using its facility as a learning tool and integrates readings and written components about the school's sustainable features at every grade level. Many staff members attend the state's annual sustainable schools summit. While the school does not currently offer AP courses, students can earn college credit in several sustainability-related subjects at nearby colleges and universities.

Met has offered an Environmental Studies Advisory since 2012, where students make sustainability and environmental justice the focus of their high school education. Students participate in trips, view documentaries, engage with guest speakers, take part in whole-school culture-building experiences, and work on individual projects and internships. The Advisory often conducts its classes in the 30-acre park next to the school. Other schoolwide outdoor education activities include hiking, sailing, aquatic landscaping, invasive species removal, bird watching, gardening, farming, and excursions to marshes, beaches, and mountains, all the while learning principles such as Leave No Trace and wilderness ethic.

The school also supports a unique real-world learning and internship-based program. Through these strong community connections, students are partnered with experts who serve as mentors to authentic projects. Students' projects have included: traveling to Sweden to learn how the country has been able to maintain a recycling rate of about 85 percent; clearing invasive species from land trust at Norman Bird Sanctuary; conducting water testing in collaboration with Salve and Aquidneck Watershed Council; engaging in beach clean-ups; taking outings to a section of trail adopted by the school; and participating in Envirothon. At the end of

each trimester, each student presents his or her learning to a panel of teachers, parents, and peers, showcasing his or her environmental knowledge.

The Met school green team, founded in 2008, focuses on a different project each year and has maintained the school's recycling rate above 85 percent every year. The group has met with U.S. senators, traveled to Washington, D.C., and advocated for environmentally sound policies.

Ponaganset High School, North Scituate, R.I.

Dedication to renewable energy technologies results in big money for a small school

Ponaganset High School is deeply committed to reducing environmental impact and energy costs by creating the best learning environment for students and faculty and providing outstanding opportunities in environmental and sustainability education. Ponaganset was among the first schools to participate in the RI Solar on Schools program. During the renovation process of Ponaganset's building in 2009, extensive effort was put into reducing costs and environmental impact, saving energy, and building the best possible school. The school has reduced GHG emissions by 35 percent over five years.

To meet the goals of the school community, an energy subcommittee was created to determine and implement the most efficient and feasible energy systems. The choice of a biomass heating system, providing a whopping 47 percent of the school's energy usage, is an excellent example of renewable energy use in school. The biomass heating system uses waste wood chips from the local lumber industry to heat the entire school, providing huge savings compared to oil, reducing emissions, and benefiting the local economy. Improved insulation, energy efficient windows, computerized HVAC systems, room occupancy sensors, and daylighting also were installed in the renovation and expansion of Ponaganset. These energy saving building features were funded through a partnership with the energy services company ConEdison Solutions.

Health and wellness of students and staff is a high priority at Ponaganset High School. The school's computerized HVAC system controls the Energy Recovery Ventilation Systems to filter any particulate matter from the air and ensure healthy air quality for all students and faculty. Ponaganset has implemented the EPA IAQTfS and has established an IAQ Plan.

Approximately 84 percent of the school grounds are devoted to ecologically beneficial uses. The site features 138 acres of naturally forested areas interspersed

with scenic foot trails used by students, faculty, and community members for athletic events and recreation. Outdoor facilities include a renowned cross country course that winds through the native forest and is used annually for the statewide track meet. The facilities also include a newly refurbished track, tennis courts, soccer, football, and baseball fields as well as a pond that is used for canoeing and kayaking by physical education students. The physical education curriculum also includes outdoor units on archery and the wide open field areas are used by both science and STEM Academy students in classes ranging from chemistry to aerospace engineering.

Ponaganset High School has a comprehensive wellness policy addressing the cornerstones of good health including proper nutrition through healthy food and beverages, cafeteria climate, and physical activity. Sodexo provides healthy, locally grown produce. School staff includes four guidance counselors, a social worker, a psychologist, and a drug and alcohol counselor. The Citizens and Students Together program supports the work of both Youth to Youth and STARS, which are organizations promoting healthy lifestyles and student leadership. STARS, in particular, supports activities through an advisory program that focuses upon improving the emotional environment of the school, and includes anti-bullying and other programs.

Ponaganset students have demonstrated dedication to renewable energy technologies at both the state and national level through innovative projects, including a fuel cell powered rock and roll band and electric/fuel cell vehicle. These renewable energy projects led to the development in 2003 of the alternative energy and sustainable systems classes that are offered at the school. Students in these classes explore a wide variety of renewable energy technologies including hydrogen fuel cell, photovoltaic and hot water solar power, wind, electric vehicle and battery technology, biodiesel, and aviation biofuels. In 2008, a group of students and their science teacher demonstrated the viability of biodiesel with the Coast to Coast Biodiesel Pickup Project, a 7,000 mile roundtrip using pure biodiesel, a project that was chronicled with a blog featuring pictures from the cross-country trip. Students also demonstrated fuel cell technology by creating a street legal, zero-emission electric vehicle/Fuel Cell Model T, a project that was covered in *Hot Rod* magazine and other media. These renewable energy projects led to a $984,000 U.S. Department of Energy (DOE) grant for the construction of an Alternative Energy Lab dedicated to renewable energy education. As part of this grant a small solar building was built from scratch by students in the STEM Academy.

Ponaganset is committed to agricultural education. The Academy of Agriculture and Natural Resources has gained status as a state career and technical education program by demonstrating excellence in the practice of educating students in the subject, and incorporates and instructs in the sustainability practices that occur

throughout the agricultural industry. The two greenhouses, aquaculture facilities, and a sustainable gardening area offer agriculturally focused students numerous opportunities to explore and report sustainable practices in plant and animal system pathways. Each year, students participating in Future Farmers of America prepare an annual banquet serving the chickens, lettuce, and tomatoes that they have raised.

Virginia

Coles Elementary School, Manassas, Va.

A global cross-section of students engages with the environment

Coles Elementary serves 500 students from 32 countries speaking 19 languages, and offers two center-based programs (hearing impaired and emotional disabilities). The school's Environmental Club members have spearheaded work to decrease energy consumption, resulting in the school reducing GHG emissions by a whopping 30 percent over two years and energy use by 21 percent over just one year. The building was ENERGY STAR certified in 2014 with a score of 81. Coles has No Paper days throughout the year, when no paper is used during instruction; Lights-Off Fridays, when students dine in natural daylight; and student monitoring of recycling of ink cartridges, eyeglasses, paper, plastic, and clothing.

In fostering environmental literacy, Coles partners with various organizations to create nine school gardens including a certified Monarch Waystation, six organic vegetable plots, fruit and herb gardens, a shade garden, and a sensory garden. Students engage in outdoor, hands-on, project-based learning, including dissecting flowers, researching the effects of different soils on seeds, learning about native butterflies in Virginia, and raising Monarch butterflies. Students use 375 gallons of recycled water collected in rain barrels to hand-water the gardens.

Social issues, responsibilities, laws, and moral obligations are explored as students conduct experiments and collect data to make decisions about self-sustaining ecosystems and students harvest vegetables to feed needy families. Students use real-world math and science to measure the gardens, start seedlings, test the pH of soil, dissect plants, and learn about life cycles. Beyond the garden, students create environmental stewardship public service announcements, label drains for watersheds to raise awareness about where water goes, visit the nearby Eastern Area Grounds for Learning Environmental Science center, and learn about the lifecycle of butterflies, among other environmental literacy enhancing projects.

Teachers' use professional development and curricular materials from PLT, Trout in the Classroom, and Project WILD; problem-based learning from George Mason

University as part of James Madison University's AmeriCorps VISTA grant; and Children's Engineer Training. Environmental and STEAM education has been integrated throughout daily instruction in all content areas.

The school's health and wellness team designed an outdoor fitness trail to enhance outdoor learning. The trail is used daily by students in the first through fifth grades as part of their morning routine before entering the school under the supervision of a physical education teacher. Coles uses Fitnessgram assessments and partnered with the neighboring middle school to organize one- and five-kilometer runs, as well as fun runs. Three- to five-minute dances serve as brain breaks throughout day. Students choose portion-controlled meals based on the ChooseMyPlate.gov program, and the school has received a USDA HealthierUS Schools Challenge Gold Award of Distinction. Coles procures local foods and hosts Fitness and Literacy Nights to highlight connect between the two.

Coles students are learning skills that prepare them to be productive members of the 21st century, and to live in harmony with nature on a daily basis.

Crozet Elementary School, Crozet, Va.

Saving big and achieving big results by reducing and recycling

Crozet Elementary is making consistent progress and to reduce environmental impact and costs, to improve the health and wellness of students and staff, and to provide effective environmental and sustainability education. Crozet achieved Exemplary Environmental Enterprise status in the Department of Environmental Quality's Virginia Environmental Excellence Program and first place in 2014 Green Schools Challenge offered by Virginia Board of Education through deployment of an environmental management system, and is striving for continual environmental improvement and evaluation.

Crozet Elementary works toward reducing environmental impact and costs on a daily basis. As a result of building automation and behavioral change, the school avoids $25,000 in utility costs each year. It received ENERGY STAR certification in 2010 with a score of 86. The school features conservation signage throughout building. Crozet has reduced diesel fuel use by incorporating more efficient buses, along with a Walk and Ride a Bike to School program funded through a Safe Routes to School grant.

Crozet Elementary composts daily, resulting in $6,000 in annual savings. Waste and recycling costs have been reduced by switching to a mixed-waste recovery

facility that will achieve a 36 percent recycle rate. Additionally, the mixed-waste program eliminates a truck visit to the school each week.

Green efficiencies and environmental health improvements have resulted from the green cleaning program, which has allowed the school to eliminate a number of cleaners and replace them with a Green Seal-certified multipurpose cleaner. The school participates in Farm to School Week and a nature running trail is used by students, teachers, parents and after-school groups to promote wellness.

The school offers many physical features that encourage environmental and outdoor education. These features include the student-created outdoor living science classroom – a biofill converted into a rain garden habitat with a weather station -- that is a state-certified schoolyard habitat. A butterfly garden and student gardens also encourage students to learn about weather, ecosystems, Virginia native plants and animals, and growing vegetables and flowers for culinary benefit. Teachers use these tools to engage students in STEM subjects. The outdoor amphitheater is used by teachers to teach a variety of subjects in a natural environment.

Crozet converted its computer lab into a Wonder Lounge, an open, contemporary learning space that promotes creativity. The Lounge is filled with tablets, digital music players, laptop computers, microscopes, Keva Planks, and similar creative tools. Teachers have access to the district's Renewable Energy Resource Center, which features a 42 kW photovoltaic system, solar thermal panels for heating water, and a wind turbine. With the aid of the NEED curriculum, this facilitates students' early exposure to green technologies and careers. Other teaching tools include Cornell Lab of Ornithology bird lessons and a salt water fish tank for exposure to marine biology. Crozet students collaborate with nearby Western Albemarle High School's environmental studies program in a variety of community projects.

Bassett High School, Bassett, Va.

Sustainable, career-driven education saves the bay and bottom line

Bassett High School, with 55 percent of its student body qualifying for free- and reduced- price lunch, believes that all students and staff must be good stewards of the environment and the school division's financial resources. Bassett embraces energy conservation, and recognizes that minimizing energy consumption and related costs will maximize funds available for use in the classroom.

An established energy conservation program with short- and long-range strategies to reduce energy consumption has been in place since 2009. From 2009 to 2014, the

school saved 27 percent on energy costs, including a 30 percent reduction in electric consumption, and achieved a 68 percent domestic water use reduction. It was ENERGY STAR certified in 2014 with a score of 79. Accurate records of energy consumption and cost have been maintained and shared with the community on a monthly and annual basis. The district works with Cenergistic and has an energy specialist on staff. Bassett engages in waste reduction partnerships with EMI Imaging, EMI Recycling, and Coca-Cola and has a Bring Your Own Technology Initiative that allows the school to avoid paper waste.

Landscaping beds have been established in raised planters at the entrance of the school. All beds are mulched seasonally to decrease evaporation. Plant selections for the color beds include water-wise perennials. Shrubbery plantings on the property include locally adapted plant species, and do not require watering beyond normal rainfall. Conversion of athletic fields to warm season Bermuda grass was also a water-wise move. Research has shown that clump-style cool season grasses such as Fescue and Bluegrass require 30.75 gallons of water per square foot per year, whereas warm season plants that spread by runners such as Bermuda and Zoysia require only 19.50 gallons per square foot per year.

In addition to facility improvements and significant savings over the past four years, Bassett recognizes that healthy behaviors of students and staff are vital to the success of the school's instructional program. Bassett has high standards for nutrition and fitness in order to improve student and staff health, attendance, and achievement. Bassett uses Fitnessgram assessments to measure physical fitness levels in all students and chart their progress on the school's fitness trail.

Environmental and sustainability education are an anchor in Bassett's curriculum. In addition to career and technical courses focused on green career pathways and STEM, all students must take Earth Science and Biology, which are rich with environmental and sustainability standards. Bassett has nationally recognized horticulture programs, which have waiting lists each semester. Bassett prepares students, not only for post-secondary education and careers, but to be responsible stewards of their environment.

The Earth Science curriculum emphasizes environmental costs and benefits of renewable and nonrenewable resources, effects of human usage on water quality, economic and public policy issues concerning the Chesapeake Bay, and changes to the atmosphere and climate due to human, biologic, and geologic activity. The biology curriculum includes an entire strand devoted to dynamic equilibria within populations, communities, and ecosystems. In particular, the effects of natural events and human activities on ecosystems are addressed. Environmental science courses emphasize that human survival depends on developing practices that will achieve sustainable systems.

Course offerings that emphasize sustainability include: Earth Science, Biology, Horticulture, Environmental Science, Facilities Maintenance, HVAC, Project Lead the Way, and Architectural Drawing and Design. Teachers receive NEED, Trout in the Classroom, and Streamside Trees in the Classroom training and teaching materials. A JROTC unit participates in Adopt A Highway, and the school's National Honors Society cleans the community's eight-mile trail, with both groups working with math, science, and social studies classes for best practices, marketing, and data analysis on these projects.

The Steward School, Richmond, Va.

Sustainability speakers fuel community cultural shift

The Steward School's mission is to prepare its students for college and life, in a community defined by robust academics, inspiration, engagement and care. The school's education philosophy is focused on applying a liberal arts perspective to real-world, systems-based thinking and problem solving. To be most effective, learning not only requires the active involvement of students and teachers, but also of parents, families, local professionals, and mentors from the broader community. Steward's students are encouraged to understand world issues through the knowledge of the natural and built environment, health and wellness, and energy and resources. The school applies real-world challenges to the curriculum and also is focused on developing innovators and leaders in resolving environmental and resource challenges. Students study erosion in math, earthquake mechanics in science, and environmental policy change in English. Additionally, students are involved in shaping the environmental policy of the school; they research idling policies, carbon offsets, and compare energy use across the campus.

Steward fearlessly tests new curriculum approaches, and, in doing so, inspires the community with new resources and experts to support this comprehensive approach to learning. Sixth graders design alternative transportation for Richmond and 5th graders test soil quality around campus. Students grow cotton and see how it is made into clothes. While the students and faculty are stretched and pushed, they also have fun. The school draws upon the faculty's expertise, paired with outside industry knowledge. Professional development is offered throughout the year, and is customized based on faculty interests and schoolwide curriculum areas of emphasis. Particular attention is paid to applying technology and nature observation to engineering design using biomimicry. Professional development related to the STEAM curriculum is ongoing, and has expanded to working with leading industry professionals.

The Visiting Innovators program has offered a wealth of knowledge and opened the door to teachers incorporating new ideas into cross-curricular activities related to wellness, sustainability, and the environment. Steward School offers a series of community educational events, and has reached over a thousand people in the community. The school has brought expert speakers from companies including Nike, Ford, The Green Kitchen, Edible Education, Flora of Virginia, Seventh Generation, and the School of Sustainability for the Chinese Language Institute. Steward also has also brought in authors on ecology and nature exploration such as Doug Tallamy, Richard Louv, and Kelly Johnson to inspire students and teachers. These partnerships have produced a wealth of lessons, along with synergy between teachers and the community in building sustainability knowledge. In 2014 psychologist Catherine Steiner-Adair and science educator and YouTube guru Paul Andersen visited Steward to discuss technology and the balance the community must strike in their lives with wellness.

In 2013 Steward School completed the construction of a 6200-square-foot facility called the Bryan Innovation Lab. It stands as a living classroom for students to engage in learning world systems in an innovative way. Its design includes native meadows, diverse natural forest, student gardens, retention ponds, rain gardens, and filtered storm drains. The building itself is made of sustainable materials, and has abundant alternative energy systems such as photovoltaic panels, geothermal wells, radiant heat flooring, rainwater cisterns, and hot-water solar panels. The goal of the Bryan Innovation Lab is to educate about the natural and the built environment with biomimicry lessons, design challenges, nature trails, wildlife reserves, and retention ponds.

Notably, across the campus, composting is up 200 percent in the last two years. The school has partnered with the community to help improve education and outreach. The Virginia Commonwealth University's Rice Center, Greater Virginia Green Building Council, James River Association, Blue Bird Society of Virginia, Wings, Worms and Wonder, Henricoplisis, Sustainable RVA, and Virginia Tech University are just a few of these outside partners. The school educates about health and wellness in yoga, self-defense, nutrition, cooking classes, hydration, nutrition, sleep, and physiology.

Steward's investment in sustainable initiatives encourages a cultural change within the school. The support of professional development, visiting innovators, and the expertise and passions of staff and faculty act as a catalyst in spreading awareness in new initiatives in sustainability connections within the classroom.

University of Virginia, Charlottesville, Va.

From colonial roots to flourishing green university

The University of Virginia (UVA), founded by Thomas Jefferson in 1819, is a community of 25,000 students and almost 13,000 faculty and staff. UVA's grounds feature Thomas Jefferson's Rotunda and "Academical Village" (a United Nations Educational, Scientific and Cultural Organization World Heritage site), and a total of 525 buildings encompassing 16.5 million square feet.

The university has set a goal of reducing GHG emissions, as well as reactive nitrogen emissions, to 25 percent below 2009 levels by the year 2025. In fact, UVA is the first American institution of higher education to set a target to reduce its nitrogen footprint. The campus includes some 39 LEED registered or certified constructions.

As a partner in the DOE's Better Buildings Challenge, UVA is committed to reducing building energy use intensity 20 percent by 2020 – below a 2010 baseline. The school reduced total water consumption by six percent in 2014 from the prior year and more than 32 percent since the 1999 peak, despite increases in square footage and population.

In calendar year 2013, UVA diverted 35.1 percent of its municipal solid waste from landfills – that's 4,077 tons of aluminum, paper, cardboard, glass, plastics, and other materials – and recycled more than 4,600 tons of ash, tires, batteries, oil, and chemicals, for a total diversion rate of 53.5 percent. The university participates in the Keep America Beautiful Recycle Mania.

In the school's dining halls and retail dining outlets, reusable to-go container programs provide zero-waste alternatives to compostable to-go containers; and a reusable punch-card incentive program offers benefits like free coffee and meals to participants who use a reusable mug, bag, or to-go container. Composting has diverted over 600 tons of organic matter from landfills to date. During the 2014 football season, UVA launched a pilot zero-waste program in the football stadium, yielding over 15,000 pounds of compost, and an 80 percent diversion rate from the stadium's suites.

The Reusable Office Supply Exchange is open to the whole campus community, and offers a way to dispose of gently used or unused office supplies and an alternative to purchasing new ones. The Medical Equipment Recovery of Clean Inventory Program diverts clean and unused surplus medical supplies and equipment from

UVA Health System's waste stream to local, national, and foreign organizations and humanitarian projects. In 2013, over 50,000 pounds of clean and unused medical supplies, with a value of several million dollars, were kept out of landfills and medical incinerators.

The Transportation Demand Management Program provides multi-modal options for students, faculty, and staff, including a bike-share program, discounts for carpooling, a ZipCar program, a bus network, bike fix-it stations, and free city bus fare. UVA also was named a Bronze-Level Bicycle Friendly University by the League of American Bicyclists.

When it comes to environmental health, UVA achieved Green Seal GS-42 certification, becoming the first university in Virginia and just the third in the country to attain this level of certification for its green cleaning program. A wide range of departments partner across the university to help ensure a safe, healthy, and secure environment, and provide support for air and stormwater permitting, compliance, and planning; erosion and sediment control inspections; environmental impact reviews; petroleum storage management; environmental management systems; and all other regulatory or environmental concerns.

UVA offers a multitude of programs, educational opportunities, and incentives to promote the health of its students, faculty, and staff. The Hoos Well program for employees focuses on six dimensions of wellness (activity, emotional, nutrition, career, social, and spiritual). A range of health and wellness services exist for students via the Department of Student Health and Counseling and Psychological Services, along with several health promotion services: peer education, nutrition, social norms marketing, tobacco cessation, eating disorder support, and substance abuse prevention.

UVA Dining, which seeks to provide local, organic, humanely raised, and fairly traded food options for students, has achieved Marine Stewardship Council certification, as well as the Virginia Environmental Excellence Program's E3 Designation. UVA is the first university to receive this state recognition for its commitment to superior environmental performance.

With regard to effective environmental and sustainability education, UVA offers interdisciplinary learning and civic engagement. The Global Studies-Environments+Sustainability Major, housed within the College of Arts and Sciences, features four tracks, allowing students to address problems associated with human transformations of the earth through the triple lens of environment, equity, and economy. The Global Sustainability Minor allows students to understand the many facets of sustainability and apply this knowledge to their daily lives. Courses focus on systems thinking, engaged citizenship, innovation, research, and interdisciplinary

thinking. UVA's interdisciplinary Department of Environmental Sciences offers courses of study that help students to learn more about global sustainability issues and technology's potential to address global challenges.

The Committee on Sustainability includes faculty, student, and staff members dedicated to fostering and building sustainability across the grounds. At the same time, UVA's educational outreach and behavior-change programs, events, and campaigns led by the Office for Sustainability are helping to build sustainability literacy and awareness across the university, which translates into action. There also are opportunities for students to engage in sustainability-related extracurricular activities through dozens of student organizations. Together, these efforts seek to change social norms by promoting sustainability behavior to reduce consumption.

Washington

Discovery Elementary School, Everett, Wash.

Sustainability education field trips and waste reduction numbers that don't lie

Discovery Elementary has reduced energy consumption, reduced and recycled waste, and improved school grounds. Their numbers don't lie. In just one month, the school's monthly waste bill decreased by 17 percent. After three months, the trash output decreased 62 percent. At the same time, recycling increased 25 percent after three months. After three months into implementation, composting increased 66 percent. By the end of the second month of Discovery's green initiative, there was an extreme reduction in waste in the cafeteria from 15 44-gallon bins of garbage a day down to less than one 44-gallon bin a day. A whopping 500 percent increase in daily recycling in the cafeteria in three months meant the school could reduce the size of its garbage dumpster from a six-yard dumpster to a three-yard dumpster.

During an energy audit, small personal refrigerators were removed from around the school. In each class, Energy Monitor (with responsibilities for turning off lights, monitors, printers, and computers) was added to the list of classroom roles. The technology department provided flat-screen monitors and removed all tube-style monitors, along with changing settings so the monitors automatically shut down if not used for a short period of time. Missing weather stripping around doors and windows was replaced. The district replaced the school's boiler with a more energy-efficient model. The school now has guidelines for thermostat temperature settings as well as a timer to run the new heating and ventilation system were installed in the fall of 2014.

Staff members avoid using plastic bags and purchasing items with excessive packaging. The school aims to purchase products made from or packaged with recycled materials, recycle all batteries, and ink cartridges. Whenever possible, it uses rechargeable batteries and both sides of paper. Staff members hold each other accountable for not wasting water and turning off lights and electronics when not being used in the classrooms. Staff uses reusable microfiber cloths for cleaning versus disposable wipes. The cafeteria has replaced disposable trays with durable trays.

Students make pledges to protect the environment. They participate in essay contests and write about their dreams to make their school, community, and the world a better place by protecting the environment. Students participate in Earth Day activities, school grounds trash pick-up, and know not to waste water in the drinking fountains. As a result of these steps and others, Discovery is a Level Three Washington Green School.

Discover formed a Verde Garden Team to organize a place where students and families could come together to experience the joy of gardening. The veggie and fruit garden area also has a cedar worm bin, greenhouse, and herb garden. Students, families, and staff members participated in the 2013 and 2014 Green Apple Day of Service. For its 2013 project, the Discovery community planted 21 fruit trees and moved 120 yards of compost to create vegetable garden beds. The garden was a huge success, and thousand pounds of produce were harvested in 2014. The student-led green team continues to monitor and make adjustments to environmental goals. Ongoing efforts are conserving valuable resources, cutting down the amount of waste generated to save money, and reducing environmental impact by reducing, reusing, recycling, and composting.

The Washington State University Extension Food Sense program is integrated in the third- through fifth-grade classrooms. Topics covered include germs, table manners, MyPlate, the five food groups, sugar, snacks, fiber, calcium, vitamins, and oils. Students take the Apple Cup Challenge which challenges students to taste 40 different fruits and vegetables. Staff members have created a community leadership program, called Food Backpacks to Go, which provides backpacks with food for 20 families in need. The backpacks, filled with food and personal health products, go home with students every Friday.

The school has teamed up with the Washington State University Snohomish County Extension Beach Watchers to educate students about the protection of local natural resources, focusing on Puget Sound. The Beach Watchers have expanded the minds of students by providing a connection to the interpretation of critters at local beaches during low tides. The Surface Water Management Division of Snohomish County Public Works provides classrooms with lessons and grants for teachers to

take students on environmental field trips. Thanks to this partnership, for the past eight years, two fourth grade classrooms have taken their students to a fish hatchery, wetlands, estuary, beach, lighthouse, nursery, and farm.

Fifth-grade students are enrolled in the Sqord fitness program, which monitors and measures their physical activity. Students learn basic motor skills and then apply these skills in individual or large group activities. Every Tuesday and Thursday, the school has Mileage Club. Every student participates at his or her own level, and runs laps around the playfield. Students have opportunities to play kickball, basketball, soccer, jump rope, foursquare, and many other outside movement games. Local fire station personnel have worked with office staff and the school district transportation department to determine safe routes for the children. Intermediate students are offered a bicycle safety workshop called Bicycle Rodeo to help students with riding gear to make sure helmets and other biking gear fit as well as learning the rules of the road. Staff members also challenge each other to log hundreds of miles on their personal bikes instead of driving to work, and participate in Bike to Work and School Month.

Hillcrest Elementary School, Oak Harbor, Wash.

Not chicken about conservation and environmental education

Hillcrest Elementary, located in Oak Harbor, Washington on Whidbey Island, is the largest elementary school in the Oak Harbor School District, with 640 students in grades kindergarten through five. Sixty percent of the Hillcrest student population are military dependents through Whidbey Naval Air Station. The school's green team was formed to engage students, staff, parents, the central office, and community members in efforts to reduce the environmental impact of Hillcrest's footprint. Schoolwide, it has been imperative to improve the wellness and health for school, students, staff, and parents. The school community provides an integrated environmental education, which is essential for the future. The school is integrating programs in an effort to reduce environmental impact and costs.

The original 1989 design of Hillcrest included two outdoor courtyards within the school. Hillcrest began a collaborative working relationship with the Oak Harbor Garden Club in 2010 to create a courtyard garden to help students and staff focus on the positive effects on growing local crops and the importance of conservation. Students now plant, weed, harvest, study insect anatomy, and learn about the lifecycle of a butterfly, among other garden learning experiences. Hillcrest now has a covered outdoor classroom, complete with white board and seating in the garden area, and, in 2012, added 12 new raised flower and vegetable beds built by staff and

Navy Partners in Education. Harvested vegetables and fruits are donated to a local food bank throughout the summer and fall. School families are invited to get produce from the garden on scheduled days.

In 2014, the green team met to discuss the best use for an additional outdoor courtyard, and determined that raising chickens was the answer. Hillcrest purchased day-old chicks, and rotated them among classrooms for the first two months of their lives. Students named each chicken, and learned and monitored the life cycle of the chickens, graphing chicken growth and weight. They created narratives and expository text and shared their learning with other students. School parents built a chicken coop using donated materials, with windows for students to observe the chickens laying eggs. Students visit the chickens daily, write about chicken behavior, collect the eggs, feed the chickens, and know each by name. The eggs are sold and the money donated to a local food bank.

The school district has supported Hillcrest Elementary in becoming more energy efficient. In the past two years, the school has replaced 25-year-old carpet with tiles and recycled materials, changed to LED lights, replaced the old boiler with a new cast iron condensing boiler, replaced the old water tank with a new condensing style hot water tank, and changed to green cleaning bleach-free products.

The school participates in Washington Green Schools and uses Leave No Trace, Project Bluebird, and FOSS materials to teach outdoor education through experiential learning. It uses National Geographic Kids, Scholastic News, and Time for Kids for expository reading. Many students live throughout the district, and more than half walk or bike. The school participates in Safe Routes to School, Fuel Up to Play 60, Let's Move Active Schools, and Fitnessgram.

The changes at Hillcrest Elementary have affected many. Students discuss how these experiences have changed their family's lives. One student reported, "We now have a garden at home. I want to be a farmer when I grow up. I love this more than anything." Hillcrest has created a community that focuses on making choices that result in positive outcomes for the earth, which is the most powerful learning experience students can have at Hillcrest. It takes the community working together to make this happen -- staff, parents, community resources, district support and students. The Hillcrest community is dedicated to doing what is best for all.

Image Elementary School, Vancouver, Wash.

Engaged students at a Washington Green School look to their future green careers

Image Elementary is committed to doing what it takes to reduce the environmental impacts and costs, working daily to improve the health and wellness of students and staff, and striving to provide effective environmental and sustainability education to students. Image's efforts have helped the school become more mindful about small, consistent efforts that make a collective big difference. Image is a 40-year-old, all-electric school serving 664 kindergarten through 5th grade students, 59 percent of whom are eligible for free and reduced-price lunch.

Since 2009, Image has decreased energy use by 68 percent. Signs around the school remind staff and students to turn off lights and water, use one paper towel, and both sides of classroom paper. Faced with the challenge of getting an older building to EPA ENERGY STAR standards, the Image community has brought the school from the lowest rating to becoming an EPA ENERGY STAR Leader in 2010 and continued to increase its score to 90 by 2014. The school now boasts an energy management plan, with an energy efficiency strategy, energy conservation targets, and a GHG emission reduction plan. Image has reduced energy use by purchasing software to regulate electrical systems, replacing lights, and consolidating appliances. Students and teachers work together to turn off appliances and equipment. As a result, Image has maintained the largest energy reduction rate of any school in the district.

The motivated and passionate students who sign up for the 20-week after-school Conservation Kids Club use project-based learning to investigate opportunities to make positive changes in the world. Students choose areas of study for their own hands-on research. The club members also lead a water conservation effort, have planted native vegetation, and have held Saturday cleanups. Image Conservation Kids report feeling like their efforts matter and make a difference. You can't create any more engaging education than that!

The school has launched a "Save your Paper, Save your Planet" initiative to reduce solid waste, including lunch schedule adjustment that encourage students to finish their lunches, as well as placement of recycling and composting bins. Games, chants, skits, and competitions encourage Image's efforts for compostable accuracy and landfill reductions. The school's paper trays for each classroom include student artwork and a poem stating "If I've got a plain blank side, take me for another ride. Thanks, The Trees."

Lessons include environmental learning through hands-on activities using FOSS Science Kits, Project WET, Project WILD, and Washington Green Schools professional development and teaching materials. In 2013, Solar Cookers International requested designs for solar cookers for African nations. Students helped write a rubric covering the sustainable design components requested.

Teachers report that teaching sustainability topics deepens and personalizes the curriculum, as sustainability integrates math, science, language arts, and social studies as well as economics, diversity, character, music, art, and physical education. Students are especially interested in emerging green careers, which will call for innovation and problem solving skills. Guest speakers have included water assessors, food and waste managers, a conservation resource manager, fish and wildlife managers, transportation experts, a patent attorney, and a solar panel lawyer.

Many classes take weekly morning mindful walks on the school's half-mile track. Students also receive tokens for running or walking around the track at recess, and the class with the most mileage is awarded the Golden Shoe, while students who reach 50 miles during the year get to write their name on a brick in the gym. The school uses Food for Life and Food is Elementary. Taking care of natural resources is a full-time, ongoing responsibility for everyone at Image, where students take care of the earth so it will take care of them.

Tahoma School District, Maple Valley, Wash.

Pervasive sustainability all around the Sound

Environmental sustainability is part of everyday life in the Tahoma School District, from lunchroom recycling to core curriculum. The district's sustainability culture began with simple ideas, such as partnering with King County Green Schools to recycle milk cartons. That partnership led to more complex projects, such as studying the effect of stormwater runoff on the health of Washington's Puget Sound. Small plans have led to the massive payoff of designing core curriculum with a sustainability emphasis. This is daily life for 7,800 students in the suburban district, which is recognized for its academic excellence. Tahoma established the basis for its sustainability emphasis 20 years ago, when it developed a set of learning standards with environmental and sustainability literacy deeply embedded.

The school board and district leadership are committed to sustainability in both the curriculum and operation of the school system. Sustainability concepts provide a thread that runs through social studies and science across all grade levels. While

there is no isolated literacy requirement, economic, environmental, and cultural sustainability experiences extend through students' education, and result in a pervasive and enduring understanding and commitment to stewardship. Students visit Safeco Field, McKinstry Innovation Center, Woodland Park Zoo, and Willow Creek Fish Hatchery to learn locally-applicable sustainability concepts and practices. As Tahoma students advance from elementary school into secondary schools, they bring with them a growing environmental awareness.

Starting with a resource conservation management program, Tahoma has achieved and maintained a 27 percent decrease in energy consumption across its portfolio over five years, even with increasing student enrollment and high community use of aging buildings. In addition to technical energy tracking, audits and recommendations, the district is engaging students, staff, and administrators through the powerED program managed by their Resource Conservation Management partner, McKinstry. This program emphasizes behavior change to bring about facility energy savings and awareness. Energy consumption and savings are tracked and shared with the community. Teams at each school participate in tracking energy performance, conduct student energy audits, and take pledges to encourage sustainable behavior at their schools.

The high-school learning unit called Humans and the Environment challenges students, as complex thinkers, to consider how environmental issues will affect their generation and those that follow. The curriculum covers several grade levels, having seniors circle back and present information to students who are just beginning their studies, as well as to elementary-school students, who are introduced to topics that include sustainability, global warming, deforestation, recycling, energy efficiency, preserving water resources, and dangers associated with plastic waste at sea. High school students use creative methods to engage younger learners, and often use outdoor areas at schools to help bring learning to life. This partnership gives students the tools to make a difference at school, in their homes, and in their community. Adults are part of the partnership as well. Teachers and other staff collaborate with students to save energy, recycle, and compost. Maintenance and custodial staff use green cleaning methods, and bus mechanics regularly maintain engines to reduce emissions.

Each school is actively engaged in recycling, composting, energy conservation, and other sustainable practices. Students get involved in clubs and activities focused on the environment, from green teams at each school, to the efforts of high-school marketing students who refurbish surplus school-district computers for use by families in need. Campus vegetable gardens, volunteer roadside litter collection, and visits to a local peat bog to observe its rare ecosystem are examples of opportunities for students to have real-world experiences in practicing sustainability.

Students keep an electronic health and fitness portfolio to track nutrition, fitness and wellness activities, and engage in weekly personal reflection. Employees choose from a variety of free or low-cost activities, including Zumba, swimming, yoga, strength and agility training, martial arts and creative arts classes. Urban and suburban living, along with the increasingly digital social interactions of children, is balanced by ensuring outdoor learning experiences are included as part of the curriculum. Outdoor learning sites are as close as the door to the classroom. Each school has multiple outdoor learning spaces, including school gardens, greenhouses, native landscape plantings, retention-pond beautification, and nature trails.

Tahoma takes great pride in guiding the environmental conscience of its students, and informing them about the importance of sustainability. At Tahoma High School, daily green team announcements remind students to take small steps to a greener future. For example, students are encouraged to carpool and given data to support why they should, and vehicle idling is discouraged in the parking lot. Students learn to properly recycle and compost, not just for a greener school, but also so they can teach their families. Students are encouraged to bring reusable water bottles to school and refill them at hallway hydration stations. Posters, signs, and classroom discussions encourage sustainability, and students find themselves immersed in information and activities that encourage responsible use of resources. Sustainability is becoming synonymous with life as a Tahoma Bear, and sustainability fits with the school district's Future Ready mission statement: "Together, provide the tools and experiences every student needs to create an individual, viable, and valued path to lifelong personal success."

West Virginia

North Elementary School, Morgantown, W.V.

Planting green school prospects in garden based learning

North Elementary School is a large, ethnically diverse school that initiated garden-based learning (GBL) in 2011. It is also the first school in Monongalia County to adopt a farm-to-school initiative. The school's model includes 24 outdoor raised beds, a composting facility, in-classroom growing facilities, vermicomposting, and project-based learning curricula. A high tunnel with 14 additional beds and a new science lab are in the works. Primary aims of these projects include developing a rainwater harvesting system, increasing school garden and local farm produce in school lunch and after school events, expanding and integrating more nutrition into the GBL curriculum, and educating families and community about healthy food and life choices.

This model builds on strong partnerships with parents, West Virginia University Extension and Teacher Education, the Monongalia County Master Gardener, the West Virginia Department of Education Office of Child Nutrition, AmeriCorps, and the Morgantown Farmers Market. The model includes teacher-leaders who integrate GBL into core subjects, including math, writing, and science. The key means to accomplishing these goals is professional development and onsite support to teachers, administrators, and cafeteria staff.

Twenty-four raised gardens provide extra greenspace and beauty to the North Elementary campus. North is also constructing a natural playground for prekindergarten and kindergarten students. This playground is a natural landscape providing students with opportunities to explore and discover. The school composts food scraps from its kitchen (about 70 pounds a week). Students are responsible for caring for the compost pile, and use the rich soil in school gardens. North works with the city of Morgantown to offer recycling at the school. Students and teachers recycle newspaper and office paper. They also are participating in a countywide energy monitoring program, use IPM practices, and implement the Green Seal-42 cleaning standard.

In addition to the expansive garden, North offers a walking trail and field where students can exercise during recess. North hosts Girls on the Run, which promotes positive social, emotional, and physical health. The GBL program, which encompasses healthy nutrition, goes hand-in-hand with exercise principles. The majority of faculty and staff are involved in a walking wellness program, and the school participates in the nationwide Let's Move! initiative. The school collaborates with Healthworks to provide teachers and students with information about healthy lifestyle choices, as well as to offer a Zumba rewards program for students.

The crown jewel of North's sustainable school efforts is the garden-based learning program that is integrated into all subjects. This program has transformed North's school culture, and engaged the community in meaningful partnerships for learning. Lessons are inquiry-based and driven by state standards in reading, language arts, math, science, social studies, and global competencies. Prekindergarten through fifth-grade teachers use the garden as a tool to develop student curiosity, fostering students' ability to think critically. Garden-related questions are the focus of project-based learning units. Students learn about composting, recycling, growing healthy foods, pollinators, and organic products. North teaches using real-world experiences, such as bundling and selling produce at the Morgantown Farmers' Market.

Wisconsin

Colby Elementary School, Colby, Wisc.

Conservation behaviors and low-cost retrofits make savings a snowshoe in the woods

Colby Elementary School serves 334 students in grades kindergarten through four in rural north central Wisconsin. The school's work is a great example of making the most of increasing efficiencies and promoting conservation behaviors. More than 40 percent of these students come from economically disadvantaged households and 21 percent are limited English proficient. Colby is a Wisconsin Green and Healthy Schools Sugar Maple level and a PLT GreenSchool!

Colby School District was chosen by the Cooperative Educational Service Agency (CESA) 10, a regional education agency that oversees 29 districts in West Central Wisconsin, to be part of an environmental initiative to help keep the school moving in the right direction with sustainability and environmental education. CESA representatives met with the staff to help work toward reducing environmental impact and costs, improving health and wellness, and increasing environmental education. The administrators, staff, and students have been very receptive to the efforts. The school has upgraded to more energy efficient lighting, HVAC, and boiler; removed vending; and installed occupancy sensors in gym.

The school started a composting effort to reduce the amount of food waste and learn how things break down and become useful again. The compost then is used in growing food. Students gather recyclable paper and cardboard to keep it out of the landfill. Milk cartons are recycled to keep them out of the garbage as well. Electricity usage is tracked, and the elementary school is in competition with the middle and high schools to see which building can save the most energy over the year. Teachers and students are conscientious about energy use in the building. As a result, only half of the lights in the hallways and most classrooms are turned on daily. In addition, classroom doors are kept closed to help control temperature.

Colby, which participates in a farm to school program, has implemented changes required by the national lunch program. Staff and students constructed five cold frames that have been used to grow fruits and vegetables. Lettuce, cabbage, and onions are harvested from the school garden, used in the hot lunch program, shared with the community, and used as teaching tools. The Staff Wellness Committee produces a monthly newsletter that contains many incentives for staying fit and healthy. Two mornings each month, staff walks the halls for 20 minutes. Kindergarten students walk or snowshoe through the school forest monthly, and the school offers an annual walk or bike to school day.

The school is taking steps to include more environmental and sustainability education by expanding the area near the cold frames to make it a handicapped-accessible outdoor classroom space. This also encourages teachers to focus on cross-curricular areas that are environmental and sustainability related. A new curriculum series for reading and language arts was selected because of the increase in nonfiction science and social studies related themes. Sustainability is integrated at every grade level through the Next Generation Science Standards and Common Core State Standards. Staff development includes trainings from KEEP, University of Wisconsin–Stevens Point, Project WET, the Wisconsin School Garden Initiative, and many others. The school obtains teaching materials from a variety of sources, including Xcel Energy, FOSS science kits, and Farm Safety Day. Students have set up a weather station and use the school forest to conduct experiments.

Lake Mills Elementary School, Lake Mills, Wisc.

Leading the way with LEED v4

This school year, more than 600 students in kindergarten through grade four attending the rural Lake Mills Elementary School (LMES) walked through the doors of a newly constructed green and healthy building, and the only kindergarten through grade 12 school to pilot the LEED v4 Beta program. While LEED recognizes facilities construction achievement, the school also has established benchmarks for green behaviors, policies, and healthy measures from an operation and maintenance perspective to ensure a healthy, high performance, and safe 21st-century learning environment. From facility to wellness initiatives to environmental education, LMES has gone above and beyond to provide a green and healthy environment for staff and students.

The school building, oriented east to west to maximize daylight harvesting and passive heating in the winter, features renewable energy technologies including photovoltaic, solar thermal, and geothermal. In addition, the school is equipped with LED lighting with automatic dimming, occupancy and daylighting sensors, and ENERGY STAR appliances. The design team anticipates this new school receiving Platinum level in the new v4 program, and an ENERGY STAR score of 82 after the building has been in service for one year and is eligible to be rated. The design and build team has spent countless hours with facilities managers to learn to use and maintain the school's systems properly.

The school has planned landscaping with all native or adaptive vegetation to avoid irrigating. Bioswales allow 100 percent of the school's stormwater to re-infiltrate on site. The school reserves five percent of the parking stalls for carpool parking and

hybrid or low-emitting vehicles. Alternative transportation is encouraged by offering bike racks and a shower facility. The school encourages active transportation with semi-annual bike or walk to school days.

LMES provided a Green Classroom Professional (GCP) in-service training as a part of their 2013 Green Apple Day of Service festivities. As a result, the school is the first worldwide to have 100 percent of staff certified as GCPs, demonstrating they have the knowledge to identify what supports or impedes healthy, resource-efficient, and environmentally sustainable learning spaces. This enables staff to recognize, adopt, and implement practices that keep themselves and their students focused, alert, and ready to learn. After completing the course and exam, staff is able to support the health of school occupants and provide the best indoor environment possible. This is critical for academic performance, because a sustainable, healthy school environment decreases absenteeism due to environmental factors, saves resource costs, and fosters an understanding among future generations of how to sustain our planet.

In the lunchroom, students are offered salad bar and fresh fruits and vegetables daily. The school's IAQ program is consistent with EPA's IAQTfS guidelines. Care was taken in the selection of new furniture to ensure low emission of volatile organic compounds (VOCs) to maintain good air quality.

The LMES community understands the importance of environmental education and how it directly connects to and supports their mission of inspiring students to be responsible citizens with integrity. To aid in the staff's understanding of their new green school, teams from the architectural firm EUA and the construction company Miron, presented basic green building concepts, such as background on the USGBC, Green Building Certification Institute, and LEED for Schools. The school has been represented at Greenbuild and at the Green Schools National Conference over the last two years.

The school's green team of staff, representing each grade from kindergarten through fourth, has focused on how sustainability can be further incorporated into the daily operations of the classrooms and how they can integrate environmental education into their classroom curriculum. The green team has worked with experts to take portions of Wisconsin's forestry (LEAF) and energy (KEEP) programs and use the sustainable features of the school to design and integrate 10 hours of environmental education curriculum per year, per full-time student, that explores the relationship between human ecology, natural ecology, and the building.

The physical building of LMES is a phenomenal environmental education resource. A web-based Eco-Screen has been incorporated into the facility. Teachers can access the Eco-Screen from their classroom smart boards as well as from a kiosk in

the building. The Eco-Screen displays real-time energy data, water-usage data, and real-time renewable energy production data from the 10kW PV system and the solar thermal hot water system. The screen provides explanations of how the systems work, and links to resources, lesson plans, and activities. A whole-building eco-tour has been created to physically demonstrate how specific building features have included flexibility, safety, security, and sustainability to promote 21st-century learning. The features are identified via the LEED category symbols and QR codes. Through the use of mobile devices, the QR codes play videos explaining how the energy-related features of the facility work. Eventually, school's fourth-grade students are expected to be able to provide tours of the school, and share their personal experiences of being in a high-performance, healthy 21st-century learning environment.

Columbus Elementary-Discovery Charter School, Columbus, Wisc.

Empowering students in a rural learning laboratory to care for the world

Columbus Elementary-Discovery Charter School (CEDCS), located in rural Columbus, Wisc., serves grades kindergarten to three. The teachers and students lead the charge in green schools education and growing a healthy school population. Environmental science is a part of each child's school experience. Plants, fish, songbird taxidermies, Yurtle the school's pet turtle, student-created nature murals, and an extensive recycling center set the stage for student learning. CEDCS recognizes that providing a green and healthy school environment contributes to an increase in student achievement. By taking action to reduce environmental impact and costs, increase health and wellness, and increase effective environmental education, CEDCS strives to empower their students to become committed to caring for the world.

One of the goals of CEDCS is to use its school as a learning laboratory for energy education, while finding ways to reduce its energy consumption. At the forefront of this goal is the involvement of students in energy-related changes taking place around them. A prime example is the comprehensive energy efficiency project that took place over the past two years. CEDCS prioritized several energy-saving projects such as reconfiguring the HVAC, installing efficient boilers and unit ventilators, and upgrading the heating and cooling controls to limit peak demand and maximize unoccupied energy use. When the gym doors were replaced with tight-fitting energy saving doors, students were taught about how this would save energy. Other examples of using the school as a tool include the use of solar panels in the indoor atrium to power a water feature and to provide light near the parking lot and

playground. The purchase of a water-bottle filling station was the culmination of a month-long study about ways to save water.

Many of the initiatives at CEDCS have started with ideas from students. Students in the Discovery Charter School program plant seeds in the greenhouse and transfer them into the school's raised bed and community gardens. These vegetables find their way into the school salad bar. The school's physical education curriculum centers on personal fitness. A favorite unit focuses on how the heart works. The heart course is an obstacle course through which students move in a manner similar to how blood circulates in the body. The school has annual walking challenges in addition to walking and biking school events that get the entire community involved.

Students in both the traditional and Discovery Charter School education programs have environmental education as a regular part of the curriculum. Outdoor education sites such as school gardens, greenhouse and community sites, local woodland, the Crawfish River, community garden, a local wetland, and the nearby International Crane Foundation are used to further student learning. At the center of these opportunities is building an awareness of the environment and the importance of sustainability. Each day, the school's All-School Morning Meeting has an environmental education focus, encouraging students to notice changes in their environment, and further encouraging them to engage in actions that contribute to the sustainability of their surroundings. For example, a yearlong study focused on an ailing Norway spruce tree located next to the school's parking lot. This study increased students' knowledge about trees, but more importantly, involved students in decisionmaking about what to do with the tree. A schoolwide vote determined that the tree would be cut down and the wood used to create tables and benches for the school library.

CEDCS has partnered with the city on projects such as solar panels, and tree plantings and will continue to do so in the future. At the 2014 town fair, students demonstrated windmill projects they had constructed during their afterschool Energy Club. The city of Columbus was one of the first municipalities in Wisconsin to become an Energy Independent Community by pledging to work toward generating 25 percent of its electricity and transportation fuels from renewable resources by 2025. CEDCS is recognized as a "Sugar Maple" School through Green and Healthy Schools Wisconsin, and is a nationally certified PLT Green School! In addition, CEDCS is a member of the state's Green Schools Network. In partnership with this organization, the staff hosted a 2014 summer institute to help other teachers use the environment as a context for learning, and have plans to host a second institute this summer. The institute brought teachers from throughout the state together to engage in environmental science in a pristine wooded setting.

Middleton—Cross Plains Area Schools, Wisc.

$2,700,000 in energy savings and thousands of sustainability-literate graduates

Middleton-Cross Plains Area School District (MCPASD) encourages and supports green and healthy practices in all of its schools. Two schools, Middleton High School and Park Elementary School previously have been honored by ED-GRS, and both are Wisconsin Green and Healthy Schools at the Sugar Maple level. Located adjacent to Wisconsin's capital city, this suburban district of 6,622 students and 1,090 staff strives to lead by example.

Over the last 10 years, MCPASD has upgraded its schools to be more energy efficient. All 10 member schools have received ENERGY STAR certification since 2007, which has saved over $2,700,000 in energy costs since 2004. The district contracted with Johnson Controls for an energy audit in 2009, and has worked with Cenergistic for the past 11 years on behavioral change and energy conservation. MCPASD has installed vending misers, efficient lighting, new windows, kitchen appliances, and occupancy sensors. Recently, inefficient Kromrey Middle School, which also had mold issues, was replaced with a new building featuring geothermal heating and cooling. A fifth grade addition to Glacier Creek Middle School also has incorporated geothermal heating and cooling. Many energy efficient, water saving, and healthy choices have been incorporated in both building projects.

MCPASD Transportation Services have replaced inefficient old buses with energy-efficient models. The transportation department has incorporated software for optimal routing, and has reduced idling in order to decrease pollution and fuel use. Four Suburbans have been made available for use with small groups to conserve fuel. The district participates in Safe Routes to School and Walk and Bike to School Day.

Middleton High School and both middle schools have installed solar thermal hot water; Clark Street Community School and MHS have demonstration solar panels. MHS has a permeable all-season turf with rainwater storage for infiltration and stormwater reduction. MCPASD is in the top 25 percent of energy-efficient districts in the United States. The district features schools where students recycle milk cartons and compost waste, along with prairie plots, rain gardens, forests, no-mow zones, and schoolyard habitats.

MCPASD is committed to providing school environments that promote, protect, and sustain health and wellbeing. Its schools have implemented Integrated Pest Management to protect human health. Health education is incorporated into all

elementary and middle schools, and high school students must take a semester health class for graduation. The high school offers a year-round movement-improvement and conditioning program to all ninth-12th graders — athletes and nonathletes alike — at no cost.

The district has a wellness coordinator and nutrition and wellness committee. Staff are enrolled in the Dean Care Living Healthy Rewards Program or the Unity Health Insurance Fitness First and More Program. Since 2006, all food and beverages sold in district schools must meet acceptable nutrition standards as established by the Alliance for a Healthier Generation.

The integrated physical education and health and wellness curriculum, called Rest-Eat-Move, is both a kindergarten through 12 comprehensive education program and a staff wellness initiative designed to provide skills and resources for achieving and sustaining healthy living for life. The Rest element focuses on three areas: passive rest (how to get a good night's sleep); active rest (daily physical decompression); and mindful rest (strategies for stress reduction). The Eat portion of the program emphasizes the importance of choosing real rather than processed foods, and stresses the enjoyment of buying, preparing, and sharing meals. The Move portion of the program -- for students, athletes and staff -- aims at creating bodies that are physically "literate," balanced, and adaptable, rather than simply adapted.

All district elementary schools participate in field trips, led by trained naturalists, to the local Pheasant Branch Conservancy (PBC) to have lessons aligned with Foss science units. Topics include trees, soils, plants, water, web of life, and landforms. An intergenerational grant was received in 2013-14 from American Girl to fund art projects by Sauk Trail Elementary fourth graders who visit a natural area, hear stories about nature from senior citizens remembering their youth, and, with the seniors' help, create art inspired by nature and these stories.

MHS biology students learn about data collection in the prairies of PBC during a scientific methods unit, and return to do service at PBC, Holy Wisdom Monastery, and/or Governor Nelson State Park. They learn to seed collect or remove invasive species. Eight Saturday mornings, fall and spring, are reserved for high school volunteers for restoration work.

A youth farm, along with raised gardens at the high school and the district's charter school, serve the district as outdoor learning environments. The greenhouse educates high school students to raise and transplant seedlings. A summer program has college interns working with elementary students to tend the gardens and learn about the benefits of organic food. A community-supported agriculture program was established for the harvests of 2014. Vegetables from the gardens are

used in the annual fall Organic Dinner, a sustainable dining experience for the community hosted by the Ecology Club.

Three levels of photography classes take nature shots at the PBC, and all students enter images in the Friends of Pheasant Branch photo contest. Students take field trips to a LEED-certified building; civil engineering and architecture students study LEED principles; working with architects; and AP Environmental Science students designed a new elementary school according to LEED principles. U.S. government students write a law changing fossil fuel use to alternative energy. In the Investigating Environmental Health course, students work to solve a local environmental health problem. Field Biology students worked with local Department of Natural Resources to participate in a buck mortality study.

Schools partner with the city to learn about and remove invasive species and participate in Envirothon, H2O for Life, and Project Lead the Way, among other programs. Teachers obtain ongoing sustainability professional Development from University of Wisconsin, Project WET, Project WILD, PLT, KEEP, and Earth Partnerships, among others.

Western Technical College, La Crosse, Wisc.

Creating a campuswide culture of sustainability in policy and practice

Located near the Mississippi River in La Crosse County on Wisconsin's western border, Western Technical College is creating a culture of sustainability at this public, rural, associate-degree-granting institution. Western has created a sustainability marketing campaign with the slogan, “It’s Easy Being Green,” and a frog logo -- known as “Neon Leon”-- to raise awareness, reward involvement, and conduct audits and collect data that are shared collegewide, in order to improve conservation efforts and change habits.

In 2007, Western signed the American College and University President’s Climate Commitment, and is working to address every aspect of that challenge. GHG inventories from 2005-2012 show a 30 percent reduction in gross emissions of CO2. In 2010, Western launched its Energy Conservation Management Program (ECMP), followed in 2011 by approval of a collegewide Sustainable Culture Policy. ECMP practices have yielded $786,000 in utility savings and an energy reduction of 4,447 metric tons of CO2.

The ECMP monitors water usage and focuses on operational water use. Western grounds have rain gardens to contain water runoff, and permeable pavers promote

infiltration of storm water into the ground, cleansing and cooling the water while recharging aquifers. One school facility uses a locally manufactured geothermal water pump to heat and cool the building, and a reuse system provides water for toilets, landscape irrigation, and firefighting tanker truck refilling.

The Union Market, Western's food service program, uses reusable food containers, offers reusable cups for water, ceramic plates, and silverware. Staff weigh and track preconsumer food waste using a LeanPath system, and donate leftover food to local shelters at the end of the week.

New construction on all campuses must meet or exceed the LEED Silver certification standard. Three of Western's buildings are LEED-certified Silver; two are certified Gold. Among several new buildings under construction, one is expected to meet Platinum standards. Western's Hydro Power Station produces energy through a water turbine, creating a renewable energy source that generates energy credits for the college, which in the future will offset usage at Western's regional locations. The college also has installed a Konvekta heat recovery system in the kitchen facilities that has reduced natural gas consumption by 68 percent.

All staff and students ride regional buses free of charge; in 2013, Western paid for a total of 67,574 rides. The college also reviews course scheduling and consolidates programs to eliminate trips to additional locations.

Working to improve student and staff health and wellness is easy in a community that promotes healthy living. Western works with the greater La Crosse community to encourage staff, students, and faculty to engage in activities like 5-kilometer runs, half-marathons, and campus fitness challenges. The area features hundreds of miles for bike riding, and Western promotes cycling as an alternative form of transportation, making bike racks available and offering free access to showers for commuters. Western partners with nearby Viterbo University to offer an Intramural/Recreational Sports program, giving all students, faculty, and staff the chance to participate, regardless of skill level or experience, and free of charge.

Adopting the Sustainable Culture Policy also has helped transform the school's curriculum. Curriculum programming at Western is driven by seven core abilities, with the seventh being "Make decisions that incorporate the importance of sustainability." Currently, about 40 percent of existing courses have incorporated sustainability. In addition, the college's Sustainability Coordinator is updating the school's sustainability plan to ensure that all courses incorporate the importance of sustainability by 2018, and that new courses focused on sustainability are developed where gaps exist.

In 2011, Western spearheaded the creation of the Sustainability Institute, which helps identify and share best practices, and educate the community at large. The Institute is now implementing the MPower Program, a nationally recognized one-year initiative to help businesses and other organizations reduce environmental impact while saving costs and creating healthier, more engaging work and community spaces.

Western's living laboratories offer another unique experiential learning opportunity for students across multiple disciplines. The living labs provide students with real world access to environmental practices. The college's passive house, the first of its kind in La Crosse, has provided local builders the chance to build to the rigorous passive house energy efficiency standards, and encourage homeowners and builders to consider this model. The Hydro Power Station provides energy for Western's regional campuses. The Horticulture Learning Center, once complete, will provide greenhouse space for a local urban agricultural center, plant starts for local community gardens, and produce for local food pantries.

Western recently created a community engagement program focused on service learning, connecting the college and community in order to meet area needs and develop a deeper sense of civic engagement, along with richer academic experiences for students. A community engagement coordinator works with students, faculty, and community organizations to identify opportunities for partnership and action.

At Western, being green is a teaching style, a work style, and a lifestyle.

Acknowledgements

The 2015 cohort of U.S. Department of Education Green Ribbon Schools is all about attaining new heights – from the trees and turbines of our schools to the expansion to include military schools overseas and postsecondary institutions. We continue to be amazed at the determination of these incredible institutions to reduce, do more with less, promote good health, and give students real-world learning experiences. Moreover, we are thrilled to watch these promising school sustainability practices spread across the nation with our schools, districts, and now postsecondary institutions teaching others to follow in their footsteps.

Here at ED, the Green Team continues to evolve, as we recruit new members and say goodbye to others who have moved on. Over the past year, current and former ED employees Jeanne Ackerson, Melissa Apostolides, Malissa Coleman, Kyle Flood, Cory Leitao, Brendan Loughran, Eddie Moat, Jennifer Padgett, Lourdes Rivery, Tayyaba Shafique, and Lizbeth Perez, all have pitched in to keep this project running on the very slimmest of budgets. This program would not be sustainable without their invaluable assistance.

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