U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

Highlights from the 2018 Honorees

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Table of Contents

Introduction

The Origins of ED-GRS

In 2011, key advocates from the Campaign for Environmental Literacy, the Center for Green Schools at the U.S. Green Building Council (USGBC), the National Wildlife Federation (NWF), and the Earth Day Network steered some 80 national and state-based nonprofit organizations to request that the U.S. Department of Education (ED) honor schools for their sustainable facilities, health practices, and effective environmental education. The award that evolved from this petition, U.S. Department of Education Green Ribbon Schools (ED-GRS), has had a significant effect on the green schools movement and allowed ED an unprecedented platform to address school facilities, health, and environment.

These advocates and the federal family ultimately assisted ED in developing a consensus definition of a green school, featuring what came to be known as the three Pillars of the award:

Pillar One: reducing environmental impact, such as waste, water, energy, greenhouse gases, and transportation, encompassing the areas of school facilities, grounds, and operations;

Pillar Two: improving health and wellness by promoting a healthy physical environment (including aspects such as air quality, contaminant control, moisture control, acoustics, daylighting, pest management, and thermal comfort) and student and staff wellness practices (such as healthy school food and outdoors physical activity); and

Pillar Three: offering effective environmental and sustainability education, including civic learning, green careers, and STEM (science, technology, engineering, and math) connections.

How the ED-Green Ribbon Schools Recognition Award Operates

Going beyond the award requested by stakeholders, ED-GRS has become the federal communications and outreach tool around specific areas that ED had, until its advent, addressed infrequently. The award has allowed the agency to use its reach and audience to address matters of school facilities, health, and environment by highlighting innovative practices and sharing useful free resources in these areas, despite limited authority to run grant programs in these realms.

Annually, state education officials voluntarily participate by nominating their top schools, districts, and postsecondary institutions based on their achievement in ED's

three Pillars. Although ED provides some suggestions as to how state education agencies might document nominees' work in the three Pillars, ultimately, states have flexibility in their selection and nomination, provided that they document progress for each nominee in all of the three Pillars. ED then uses the award to communicate honorees' promising practices and the helpful resources they successfully employ to all of the nation's schools.

Growth of the Initiative's Communications and Engagement Functions

Over time, ED has added several components to the initial school award, including recognition of school districts and postsecondary institutions, as well as a state education agency official's award. The program's outreach also has grown, along with its engagement functions, with a resource web site, www.greenstrides.org, and a Green Strides tour spotlighting clusters of honorees around an annual theme. Green Strides, the outreach and engagement arm of the award, uses its web site, a newsletter, and social media to get the word out about free resources, programs, grants, and webinars available to schools in the three Pillars, to the extent that ED's limited federal resource commitment allows.

ED-GRS by the Numbers

With the 2018 cohort, the award has now honored some 386 schools, 62 districts, and 40 postsecondary institutions. In this case, larger numbers are not necessarily indicative of broader influence. ED-GRS was never intended to certify thousands of schools. Each year, state education agencies are invited to nominate up to five prekindergarten through 12th grade school or district candidates and just one postsecondary institution. This is because ED requires only a few examples to highlight innovative practices. For the same reason, institutions – whether school, district, or postsecondary – are eligible only once for this award, and always must state their designation with the year in which they were honored. Once ED has highlighted an institution's practices, it is useful to move on to highlighting other, diverse examples. In fact, schools nominated from districts that already have won the award should demonstrate achievements above and beyond those previously honored in the district application.

ED-GRS Honorees by Year and Type

Year	Schools	Districts*	Post-secondary*	Total
2012	78	N/A	N/A	78
2013	64	14	N/A	78
2014	48	9	N/A	57
2015	58	9	14	81

2016	47	15	11	73
2017	45	9	9	63
2018	46	6	6	58
Total	386	62	40	488

*The District Sustainability Award was added in 2013, and the Postsecondary Award in 2015.

Number of Participating States

Despite the exciting efforts ED has highlighted with this recognition award, there is still work to be done to improve school facilities, health, and environment engagement. Roughly 30 states voluntarily nominate annually for this award. That means ED does not have a mechanism for highlighting the practices of green schools in the remaining 20 states, where state education agencies choose not to nominate.

Side bar: Number of Nominating Authorities by Year

Year	Number of Participating Nominating Authorities
2012	30
2013	32
2014	30
2015	30
2016	27
2017	29
2018	26

- All states, territories, the District of Columbia, the Department of Defense Education Activity, and the Bureau of Indian Education are invited to nominate.

Contributing to the Development of a More Coherent Definition of a Green School

A key contribution of the award is believed to be that -- to some degree and for at least a time – it brought various agencies and organizations together around a common definition of a green school. Rather than one organization using the term "green school" to denote an energy-efficient school, another using it to refer to institutions offering environmental and sustainability learning, and a third employing it to indicate environment health or wellness practices, there has been a convergence such that a green or sustainable school must encompass all three Pillars. There continue to be initiatives that focus squarely on one segment of this work; however, it usually is with the stated understanding that they form part of a broader three-Pillar effort.

A Bully Pulpit for School Facilities, Health, and Environment

In 2011, the term "green school" was a relatively unknown concept at ED, as well as across much of the country. Today, there is a growing understanding of what this work entails, at least in small part because of ED's efforts annually to illustrate this work with the concrete practices of its honorees. ED's oversight of this award has offered the agency an opportunity to address and engage on school infrastructure and operational costs; environmental health and school wellness practices; nutritious, local, and student-grown school food; and hands-on, outdoors, project- and place-based, authentic, environmental, civic, and sustainability learning, among other related topics. The award also has allowed ED to highlight unique local, state, and national partnerships and where sustainability efforts intersect with equity.

A Significant Effect with a Limited Budget and Innovative Collaboration

Despite the limited availability of funds, the award has facilitated collaborations and connections that have saved resources. For example, both ED-GRS and Green Strides have enabled ED to share the many programs for schools offered by counterparts at the National Oceanic and Atmospheric Administration (NOAA); U.S. Environmental Protection Agency (EPA); U.S. Departments of Agriculture, Interior, and Energy; and collaborators across the for- and nonprofit private sectors.

In the same way that ED works more effectively across a broader range of federal agencies as a result of the award, many state education agencies also are collaborating in exceptional ways with state health, environment, and energy agencies to select their nominees to ED. The private sector, both for- and nonprofit, also has gotten involved at federal, state, local, and school levels, working with schools and governments. Through this collaboration, ED's recognition award has become a tool to get various parties working better together for the benefit of students across the nation.

Green Schools Are Successfully Serving Disadvantaged Populations

Nearly fifty percent of ED-GRS honorees have served majority disadvantaged student populations, as measured by free and reduced-price lunch. While this is in part due to award criteria design, which asks states to ensure at least one of their nominees is disadvantaged, state nominations have exceeded this minimum requirement. With ED-GRS designated schools, districts, and post-secondary institutions providing better education to traditionally underserved students, green schools practices may be another tool to advance equal access to a quality education for all students.

A Green School Need Not Be Newly Constructed

To ensure that the award highlights diverse examples of sustainability, it assesses candidates based on resources available to them, rather than in comparison to each other. In fact, the award has, over the years, highlighted many older school constructions that are engaging in low-cost, but highly effective retrofits and behavioral change. All of these are steps that any school community can undertake, without a new construction that is designed specifically to be resource efficient and environmentally healthy. In this way, the award has helped to educate the public about the broad applicability of green school practices, in old buildings and new.

Creating Incentives for Multiple Pipelines for Sustainability Improvements by All Schools

Another important consequence of the award has been the refinement of various national and state-specific green schools programs that it has spurred. Many states have realigned pre-existing state green schools programs, built new ones, and now recognize runners-up beyond those they nominate to ED, in order to create pathways to the national award, broaden recognition within individual states, and incentivize more change.

The 2018 Cohort

This year's selectees were confirmed from a pool of candidates voluntarily nominated and exhaustively reviewed by 26 state education authority implementation teams, including 25 states and the Department of Defense Education Activity, which manages all schools for military children in the United States and overseas at American military bases. While selection processes vary from state to state, members of several state agencies as well as outside experts often comprise selection committees. At the federal level, we have selected 46 schools, six districts, and six 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 diversity of U.S. Department of Education Green Ribbon Schools, District Sustainability Awardees, and Postsecondary Sustainability Awardees and range of their work proves 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 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 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 2018 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.

The 2018 Green Ribbons are here. Prepare to be amazed! When you recover, go to our http://www.greenstrides.org 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 and
Facilities, Health, and Environment Liaison

Honorees at a Glance

Total honorees	58
Prekindergarten through 12th grade schools	46
Non-public schools	6
Charter schools	2
Magnet schools	2
Public schools	40
Districts	6
Institutions of higher education	6
Total disadvantaged	26 (45 percent)

2018 Director's Award

The Director's Award recognizes a state education official's exemplary efforts to administer the U.S. Department of Education Green Ribbon Schools (ED-GRS) recognition award. The ED-GRS Director's Award is given annually to the state education agency official who does the most to advance green schools in his or her state, by running a robust competition and nomination process; connecting schools to resources in all three Pillars; amplifying the stories of honorees; helping schools learn from one another; partnering with a variety of entities to bring more resources and expertise into schools; and exhibiting a dedication to exceptional school facilities, health, and environmental education through activities outside of the administration of the award.

ED is delighted to have selected Penny Taylor, director of the Florida Department of Education's Office of Healthy Schools. For seven years, Taylor's leadership and dedication have been integral to the award's success in Florida, and to the continued momentum of the green schools movement in Florida, and across the nation.

Taylor gave the award a permanent home in her office in 2012, and hosted a leg of the Green Strides Tour in 2014. She has supported schools and districts in the process of applying for the award, including providing feedback and mentoring so that they can improve for re-application. She has participated in the Florida Summer Health Academy, Learn Green Conference, Sustainable Florida Summit, and the Green Schools Conference and Expo, among other professional gatherings related to school health, environment, and sustainability. She also has built successful partnerships with the Florida Department of Environmental Protection, the Florida Department of Health, the Florida Department of Agriculture and Consumer Services, non-profit Sustainable Florida, as well as curriculum and facilities offices in the Florida Department of Education. The Memorandum of Understanding she devised with several of these partners established the Florida Green School Network, helping to create a pipeline of nominees for ED-GRS recognition and to support the green schools movement in the state of Florida

She has modeled excellence in U.S. Department of Education Green Ribbon Schools implementation for other state education authorities to follow. We commend Taylor for her work to promote environmental stewardship, health, and sustainability, and for inspiring even more schools to aim high.

2018 U.S. Department of Education Green Ribbon Schools

Alabama

Legacy Elementary School, Madison, Ala.

A learning pond inspires an entire school of fish

The mission of Legacy Elementary School is to create students who lead by example, explore with passion, and succeed in all their endeavors. The faculty provides students with an active, student-centered instructional setting that extends learning beyond the classroom and into the world around them using real-life connections, with the understanding that children should be given multiple opportunities to develop leadership skills and take ownership of their learning before entering middle school. By incorporating environmental and sustainability education, students become leaders of their future.

Legacy Elementary's outdoor classroom

Legacy's Project Pond is one of the largest outdoor classrooms in the state of Alabama. Project Pond is an integral part of everyday life at Legacy and used by students every day. Through Project Pond, students learn about and explore the habitats of the many animals that make their home at the pond, while also learning how to maintain the pond's natural environment. Pond workdays are set aside as an extension of the school day to build student ownership and environmental responsibility.

In addition to providing direct interaction with their outdoor environment in an educational setting, Project Pond offers students opportunities for leadership. Students who serve on the student pond committee are active in making decisions about the outdoor classroom, and those involved with the Lion Postal Service are tasked with spreading the news. "Big Fish in a Little Pond" is a program created by students, for students. This cooperative project involves fifth-grade students, the Big Fish, in planning, preparing, and delivering standards-based science lesson to younger students, the Minnows, in kindergarten through fourth grade. In both roles, students eagerly become leaders of their own learning.

Legacy students are proud of Project Pond, and take an active interest in showcasing it to the school community through events like Family Reading Night, Math and Science Night, the Special Needs Rodeo, and the Watch D.O.G.S. dads kickoff event. A wheelchair-accessible pathway around the pond is illuminated for Family Reading Night, adding a beautiful touch. Every year, Legacy welcomes wildlife biologists from Alabama Wildlife Federation, where they provide casting and fishing lessons. Each student has the opportunity to earn his or her own youth fishing license by participating, and all Legacy students have the opportunity to go fishing at Project Pond. These extracurricular activities help foster a lifelong love and appreciation for the beauty and joy of the outdoors and wildlife, and instill a sense of pride in students of their campus.

The Legacy community demonstrates a dedication to sustainability in its management of the school building and grounds as well. The school has switched to low-wattage light bulbs, placed aerators on water faucets, installed water bottle filling stations in the cafeteria, and begun the installation of solar panels. Playground equipment is chromate copper sulfate-free, and school facilities personnel take leaks seriously, responding immediately to prevent mold issues.

School counselors and cafeteria workers collaborate with teachers in educational programs to teach students healthy habits ranging from dietary choices to character education. Every month, Legacy students participate in "Healthy Conversations," a program in coordination with physical education teachers and cafeteria workers, which uses Legacy's Student Broadcasting Service to teach students the importance of a variety of food groups in a healthy diet.

Legacy works with several outside agencies to provide students a glimpse of environmental issues and careers in action off campus. Legacy's fifth graders visit the McDowell Environmental Center, where they experience a farm to table relationship firsthand. Annually, students participate in a drinking water festival at the University of Alabama—Huntsville, where they learn about the importance of water and our relationship to precious wetlands, ponds, rivers, and other water resources.

Like many schools, Legacy has an active recycling program. The school takes students a step further by visiting the solid waste disposal and recycling center where school waste is incinerated, recycled, and used to power Redstone Arsenal, a nearby Army garrison. On this trip, Legacy students see and experience the effects of renewable energy firsthand.

Legacy was chosen to participate in GreenpowerUSA's engineering challenge. A Legacy team is designing, building, testing, and racing an electric car. Legacy partners with the Alabama Science, Math, and Technology Initiative, Project Lead

the Way, Project WET, and Project WILD to bring environmentally and sustainability-focused STEM into the classroom.

Woodland Forrest Elementary School, Tuscaloosa, Ala.

Discovering Alabama, while protecting one watershed at a time

Woodland Forrest Elementary School is a place where all students embrace the motto: "Discovery Starts Here." Located on 15 acres of land in the Hurricane Creek watershed, Woodland Forrest serves 527 prekindergarten through fifth grade students within the Tuscaloosa City School system. Woodland Forrest makes a great effort to ensure that all students experience the excitement of science and, in so doing, discover that the natural environment is worth preserving. A Discovering Alabama model school, a Leader in Me school, and a Title I school, Woodland Forrest educates with the belief that all students can be leaders, taking responsibility for both themselves and their environmental impact.

Woodland Forrest students mapping the school garden

Abundant and purposeful nature areas are available around the school for students to experience learning outside the classroom. Woodland Forrest is proud to be the home of an Alabama Certified Outdoor Classroom, which includes vegetable and butterfly gardens, a pond with recirculating water-flow waterfalls, sensory gardens, a bird sanctuary, and a nature trail. Students experience science in this real-life setting, gaining valuable opportunities to learn about their place in the natural ecosystem. Students learn the importance of crop rotation, integrated pest management, and composting through their garden. Not only do they participate in planting and tending to their gardens, but they eat what they reap. This brings their learning to life.

Students use the Woodland Forrest nature trail, which runs through approximately two acres of undeveloped forest land, to learn about native plants and natural wildlife habitats. In the school's Discovery Lab, classroom teachers collaborate with the

science instructor to teach lessons that help students understand their role in protecting the environment. Reading and social studies materials purposefully integrate readings to support learning about sustainability. Teachers participate in professional development opportunities including Project WET, Project WILD, Project Learning Tree, Alabama Math, Science, and Technology Initiative, Growing Up Wild, and Alabama Wildlife Federation. Woodland Forrest also partners with organizations such as Johnson Gardens & Café, Resource Conservation and Development, Alabama Museum of Natural History, and Geological Survey for funding opportunities.

Articles featuring the school's approach to environmental education have appeared in print in The Tuscaloosa News, the University of Alabama's Museum Chronicle, and the University of Alabama's Capstone Educator. Woodland Forrest has written and received grants totaling over $17,000, funds which have been used to improve the outdoor classroom, control drainage and runoff on campus, and build a covered amphitheater, which can hold an entire grade level for outdoor classes. The school also was featured on the Emmy Award winning television show Discovering Alabama as a model school. In the documentary, which aired on Alabama Public Television and other local stations, Woodland Forrest students were showcased as they discovered that Woodland Forrest is part of the Hurricane Creek watershed, and then took a canoe trip down the creek to explore the diversity of the region, learning how development affects our environment and the water flow along the way.

The Woodland Forrest community also takes health and wellness seriously. Mental and physical health are being essential for student well-being, and the Woodland Forrest community ascribes to the American Psychological Association's assertion that being in nature provides psychological and physical benefits for children and adults. For this reason, the school aims to have students outdoors at least 30 percent of their day. They participate in Jump Rope and Hoops for Heart annually.

Woodland Forrest participates in the U.S. Department of Agriculture (USDA) and U.S. Department of Defense Fresh Fruit and Vegetable program. The school encourages staff members to maintain optimal health through participation in programs such as Scale Down Alabama and by partnering with Tuscaloosa Parks and Recreation for discounted memberships to their fitness services. Students recognize and report bullying with the help of a Harassment Awareness Learning Together (HALT) program and as Leader in Me students. The school has a full-time nurse, and students receive vision and dental screenings. Stephen Covey's Seven Habits of Happy Children is used during age-appropriate counseling lessons, taught monthly by a guidance counselor.

Woodland Forrest students participate directly in pest management by hand-picking bugs off plants in the garden, while adults control larger pest outbreaks with organic material alternatives to chemicals. The school uses cleaning products from companies such as Spartan Chemical, Solution and Consume that are committed to safe, sustainable practices. Radon and mold levels are tested regularly, and the school implements a no-idle zone for buses.

Woodland Forrest has taken measures to reduce energy consumption by building four prototype classrooms that use natural light and sustainable materials, with plans to add further upgrades in the near future. The use of energy-efficient lightbulbs and centrally controlled heating and air has helped the school to attain an ENERGY STAR Portfolio Manager score of 90. Woodland Forrest conserves water with rain barrels in the garden and timed irrigation systems. Students participate in the local phone book recycling contest, work to recycle on campus, compost their uneaten fruits and vegetables, and recycle bicycles.

Woodland Forrest cultivates multiple partnerships that provide content-deepening opportunities for teachers and students, as well as exposure to real-life careers in environmental, sustainability, and STEM careers. The school hosts a Family Science Night to showcase a culmination of months' worth of classwork on STEM projects. Two of the most recent Family Science Nights each were attended by over 500 people. Woodland Forrest's DiscoverFest, an Earth Day celebration, invites community partners to visit and share expertise. Students participate in STEM lessons such as wiring cardboard rooms for efficient lighting, building model dams to harness the power of water, and designing a robot to test for nuclear radiation in a model failing nuclear facility.

Jacksonville State University, Jacksonville, Ala.

Using environmental education resources and programs to serve and educate the public

Jacksonville State University (JSU)'s first official commitment to environmental and sustainability education began in 1995 with the creation of the Environmental Policy and Information Center (EPIC). Biologist Pete Conroy, EPIC director, since has led efforts to create a National Wildlife Refuge, two national parks, and a national wilderness. The University participates in a statewide campus sustainability coalition, and hosted a key meeting of higher education sustainability professionals.

The Little River Canyon Center, opened in 2009, was one of the state's first LEED-certified public buildings, attaining Silver certification. On a daily basis, the facility

educates the public on ways to conserve energy and reduce environmental impact. Use by the public is rapidly increasing: In 2015, the National Park Service counted 250,000 visitors at Little River Canyon, and in 2016, 460,000 visitors. A pilot program began in 2016 in partnership with the Fort Payne school system. This program, within two years of its inception, will see all 3200 students from prekindergarten to 12th grade at Fort Payne attending a field trip every year to the Little River Canyon Center. The goal is that by allowing yearly, continuous exposure of the students to the natural wonders of the Little River Canyon Preserve and its sustainability efforts, JSU will build future naturalists, scientists, and children with a general love for the outdoor world.

At the Little River Canyon Center, visitors learn about sustainable features such as geothermal heating and cooling, recycled building materials, and a rooftop water silo that collects 2,500 gallons of rainwater to irrigate areas around the property. Each room, storage space, office, restroom, kitchen, and hallway is equipped with lighting/occupancy motion sensors. Restrooms feature automatic timed water faucets, waterless urinals, high-powered hand dryers, and high/low flush option commodes.

Middle school students study Terrapin Creek, near Piedmont, Ala. through Jacksonville State University.

For 26 years, JSU Field Schools have provided diverse, in-depth programs, including environmental education programs, outdoor recreation programs, field trips, outreach, summer camps, general public programs, and festivals, which are designed to nurture an appreciation of Alabama's natural and cultural significance, celebrate diversity, and foster stewardship of the natural world. JSU Field Schools promote natural history and history education through the Little River Canyon Center, DeSoto State Park, the Talladega Mountains Natural Forest, and other outdoor classroom locations.

One initiative begun in 2016 within the Field Schools was intended to make the National Preserve more accessible to all people. The area around the JSU Field Schools has a large Hispanic population. A group of 65 English as a Second Language local high school students attended a pilot bilingual field trip. Most of these students had been in the United States for under a year, and few spoke English. As a result of their visit, many of the students have returned to the Little River Canyon National Preserve with their families. To continue this outreach, the

Field Schools have begun monthly Latino roundtable meetings to assess how to better serve this community.

The Frog Pond Wildlife Preserve and Observation Area is located on a two-acre seasonal wetland in the hills of Northeast Alabama, just a short drive from the cities of Jacksonville and Anniston in White Plains. It was developed by the staff of JSU EPIC in 1990, and since has attracted countless individuals, schools, scouts, bird watchers and others seeking outdoor activity. Designed as a place to learn, it demonstrates wetlands as living laboratories filled with biodiversity.

Sustainable building features are hardly isolated to one facility. Throughout campus, Niagara Energy Management systems in JSU buildings monitor and control temperature and identify operational issues. Occupancy sensors are in restrooms and hallways in newer facilities and recently updated dormitories. Heating, ventilation, and air conditioning (HVAC) upgrades improve indoor air quality and respiratory health through better ventilation, as well as contaminant and moisture control. Two dormitories received Mitsubishi HVAC units recently, and others will follow soon. Replacement of these units will save $45,000 annually per building, a potential reduction of $2,000,000 annually. Solar energy powers five emergency call boxes located in key areas on the main campus. Students also may use these stations to request a police escort to their dormitories after dark. The change from fluorescent lights to light-emitting diode (LED) will save $116,000 annually with the replacement of 2,500 bulbs in the twelve-story Houston Cole Library.

In addition to energy conservation features, JSU aims to improve water conservation and quality. The installation of campus hydration stations three years ago has saved 83,300 bottles. Filters are in place for lines supplying water to campus food service, ice machines, and hydration stations. The JSU food service has saved 5,800 gallons of water since 2010 by going trayless. The Physical Plant staff constantly monitors all water usage on the main campus and reacts immediately to repair any problems. JSU is a tree-friendly campus with drought-tolerant and runoff-resistant landscaping. The Office of Continuing Education and Outreach offers a non-credit Water Treatment Professional certificate program for individuals interested in the water and wastewater treatment field.

The Earth club inspired recycling efforts in 2016 through a $38,425 Alabama Department of Environmental Management grant. The project reduced 653 tons of trash usually produced by JSU to 98 tons. This recycling effort reduced landfill tipping fees by $2,500. In 2016, 800 gallons of fryer oil was recycled into biodiesel. External vendors provide removal and recycling of waste and properly dispose of all hazardous waste and chemicals. The “When You Move Out, Don’t Throw It Out” program began in 2017, in partnership with the Salvation Army. Bins are located

near each dorm on campus, and students are encouraged to share any discarded items by placing them in the bins.

The Gamecock Express, JSU's diesel transit system since 2009, provides alternative transportation, and features bike racks for those combining two alternative modes of transit. Student parking decal purchases decreased by 33 percent and bicycle decals by 77 percent, as more students began taking the transit system and walking. Passenger count for the transit system in fall 2017 was 47,290. Several departments use electric golf carts during normal daily activities. Electric vehicles transport parents and guests on preview days, on graduation day, and from various locations on campus to sporting events.

Food service provider Sodexo uses 92 percent Green Seal-certified cleaning products. Sodexo works closely with local produce distributors to maximize the fruits, vegetables, and dairy products purchased from local farms. A 100,000 square foot Wellness and Fitness Recreation Center will be opening in January 2019. JSU offers a Bachelor of Science degree in exercise science and wellness, and a Master of Science in education with a major in physical education and a concentration in nutrition. JSU's Student Health Center averages 25 students daily. The Counseling Center provides access to licensed mental health professionals for 500 students, faculty, and staff per semester. Peer educators coordinate events on alcohol awareness, sexual responsibility, and other trending topics and educational events.

The University Recreation Outdoor Adventure Program provides resources that allow students to access the local outdoor areas more effectively, from kayaking to rock climbing to fishing to mountain biking to hiking. The 24th annual Cheaha Challenge Gran Fondo Century and ULTRA bike ride took place on Sunday, May 15, 2017. The start and finish of the event were at JSU's Pete Mathews Coliseum, the third year for the city of Jacksonville to host the Gran Fondo. Proceeds from both rides go to benefit the Chief Ladiga Trail, Coldwater Mountain Trails and local high school mountain bike teams.

The university offers a Bachelor of Science in biology with a concentration in ecology and environmental science for graduates pursuing careers in those disciplines. There are on average 58 students seeking a Bachelor of Science in biology with a concentration in ecology and environmental science. In light of the massive, 780,000 cubic meters of crude oil that spilled into the Gulf of Mexico in 2010, biology students and professors have been exploring the long-term consequences of that spill on the Gulf ecosystem and what the spill will mean for humans and the environment over the coming years. The JSU Biology department also is the home of the Center for Tick-Borne Disease Ecology. The Center provides an avenue for research and education in multidisciplinary areas of tick behavior, ecology, host

range effects, microbiology and molecular technique development and facilitates partnerships across the Southeastern region.

The Alabama Math and Science Teaching Initiative (AMSTI) distributes 2,700 science kits to teachers in 15 school systems in seven counties and 70 schools, educating 67,500 students. JSU AMSTI also distributes $7,100,000 in equipment and materials to teachers. University STEM faculty have trained and mentored teacher trainers, sought team mentors from industry, and involved JSU STEM student interns as role models to encourage kindergarten through 12th grade students toward STEM careers. In addition, the JSU planetarium provides a fascinating experience through which kindergarten through 12th grade classroom students, youth organizations, and university students can learn about astronomy.

California

Monterey Road Elementary School, Atascadero, Calif.

Using environmental and outdoor education to meet the Next Generation Science Standards

Monterey Road school programs promote exercise, positive school climate, sustainability, and garden time, all integrated across the curriculum on a newly renovated campus. Modernization in 2012 resulted in the installation of high-efficiency technologies and, in 2014, a rooftop 16 kilowatt-hour photovoltaic array was installed, which meets 70 percent of the school's energy demand. The school's facilities exceed state energy standards by at least 20 percent. Energy use was reduced by 70 percent from October 2012 to November 2017.

Monterey Road has reduced the use of chemical cleaners by using microfiber cloths for 90 percent of all cleaning. Health and wellness is supported in many ways. Sports are taught three times a week by local high school students, intramural sports tournaments happen once a month, the parent-teacher association (PTA) hosts a Long-Jump-A-Thon, music plays for "Dance Days" during recess three times a week, and teachers have access to a weekly exercise class. Birthdays on campus are celebrated with healthy snacks or nonfood items.

The Caring Schools Community program at Monterey Road is a program that builds classroom and schoolwide community while developing students' social and emotional skills and competencies. In addition, students have daily access to the school psychologist and biweekly campus visits from Paso Robles Community Centers counselors. Students participate in cooking lessons using food grown in the

garden, and the third grade holds salad parties to eat what they harvest. Family cooking nights throughout the year give families the opportunity to cook healthy meals using produce from local farms and campus gardens.

Monterey Road's garden, outdoor classroom area, food forest, and native plant habitat uses over 19,000 square feet, which is about 5.5 percent of the school grounds. All planters and a grassy slope have been converted to native plant habitat by students. One planter is a devoted butterfly garden used for educational purposes. Lawn areas are used as an extension of classrooms. Students were involved with all steps of the process to design, construct, and now maintain the food forest, which is intended to function like a forest ecosystem with five fruit trees, vegetable plants, California natives, herbs, and berries that provide food and an additional educational space for students. The food forest is used as another outdoor learning space where lessons are taught in connection with the California Next Generation Science Standards (NGSS).

Monterey Road students take a garden lesson with partner organization One Cool Earth

The main garden site at the school includes 23 raised beds, a wheelchair-accessible bed, three student-designed brick beds, and various planters. Produce from the garden is served in the cafeteria, sold on Mondays at a mini-farmers market, and donated to a Wellness Kitchen for use in meals prepared for cancer patients. Students learn general garden maintenance that supports life science lessons through planting seeds, harvesting, collecting seeds, and composting. Students develop problem-solving skills when deterring gopher activity and designing weather protection.

Monterey Road began an annual student-led waste audit in 2015. Waste audits are supported by One Cool Earth and performed by students. All students separate lunchtime waste into compost, liquid, recyclable, and landfill bins. In January 2016, Monterey Road added a composting program that includes vermicomposting and lunchtime waste sorting led by green team students in grades three through five. A new classroom waste protocol was implemented last year: classrooms no longer have landfill trash bins, only recycling bins that are emptied into the school's main recycle bin at the end of each day. Monterey Road documents a 56 percent

diversion rate, and has reduced the amount of waste being sent to the landfill by 26 percent over the last two years.

At Monterey Road, all teachers integrate Mystery Science curriculum and National Energy Education Development Project (NEED) energy science kits that are provided for free by the Cuesta Sustainability Resource Center. NEED focuses on the science of energy, renewable and nonrenewable energy sources, and electricity, with many hands-on experiments. NEED also offers students opportunities to explore topics in the garden, math, graphing, geography, art, and career pathways. Outdoor education also includes field trips to farms, aquariums, a landfill and recycling center, an outdoor school, and water treatment plants. Teachers from each grade attended a professional development workshop on implementing the California NGSS using outdoor education and NEED kits. Partners in the workshop were from the San Luis Obispo County Office of Education, One Cool Earth, and Cuesta Sustainability Resource Center. The Student Council of 20 fifth graders is committed to greening the school by working to replace more turf on campus with drought-tolerant landscaping.

Monterey Road develops short-term and long-term sustainability goals through the Gateway to Green Schools program offered by the Central Coast Chapter of the USGBC. The school received California Green Ribbon Schools Silver Level Awards from the California Department of Education in 2016 and 2017, using the program application as a benchmarking tool and roadmap for further school greening efforts. The company EcoVox Energy Analytics, is used to benchmark Monterey Road's energy efficiency by tracking electric consumption and monitors all HVAC activity. Monterey Road ranks four out of four for high performance by EcoVox.

Monterey Road has several representative stakeholders that participate in ongoing green efforts including the PTA, student council, garden committee, One Cool Earth, garden club, school site council, and English language advisory council. These stakeholders collectively inform the daily operations of the school. The garden committee maintains and teaches lessons in the garden. The student council is made up of fifth graders who meet twice a month to share sustainability ideas and goals. The PTA meets once a month and sends out a monthly digital newsletter. All parent updates are sent biweekly via email to reduce paper waste. The PTA purchases materials for the garden, encourages volunteering in the garden, and keeps the school community up to date on garden activities. The school site council is an advisory committee whose goal is to help identify needs of the school, set goals, and allocate funds. The committee is composed of parents, teachers, the principal, and other school personnel. The school site council meets once a month, and meetings are open to the public.

Top of the World Elementary School, Laguna Beach, Calif.

Place-based education begins with school buildings and grounds

Top of the World Elementary School, called TOW by the local community, is nestled in the hills of Laguna Beach and has been providing a robust and innovative education for students since its inception 50 years ago. TOW has always placed an emphasis on developing environmentally and socially conscious students by providing opportunities for them to have positive influence on the local and global community.

TOW has one of the oldest school garden programs in all of Orange County, which is situated south of Los Angeles on California's coast. There are three on-site gardens totaling half an acre, which are used as outdoor classroom spaces. The first site serves grades three through five with 30 vegetable plots, 25 fruit trees, an outdoor amphitheater, a fire-safe garden, fruit tree guild plantings, a composting corner, an 18-foot geodesic dome greenhouse, and an outdoor cooking station. The second site serves grades one and two with eight plots, a five senses garden, a certified Monarch waystation pollinator garden, a waste sorting station, and a cooking station. The space also features a window to the canyon learning area. Kindergartners have a raised vegetable bed, worm bin, and apple tree in the play area for continuous access during recess. TOW works with 75 parent and community volunteers who contribute 2,800 hours maintaining the gardens annually. Students visit the gardens on a weekly basis, participating in lessons aligned to the California State Standards. During the 2016-17 school year, students spent a combined 10,000 hours learning outdoors.

TOW's garden features an 18-foot geodesic dome greenhouse, funded by a Seeds of Change grant, which functions as a model of sustainability. The growing dome is designed as a self-sufficient, net-zero energy structure where students can interact with sustainable design in a hands-on manner. Its passive solar use allows it to heat up during the day and stay warm overnight. It features an above ground pond, vents controlled by the expansion and contraction of beeswax, and solar ventilation fans. Students learn about weather, aquaponics, seed propagation, green design, and engineering principals in the growing dome.

The Laguna Beach Unified School District has partnered with Schneider Electric to help implement energy conservation districtwide. Schneider Electric implemented several conservation measures at TOW. The first phase of the energy efficiency project included interior LED lighting upgrades to all existing interior lamps. This LED installation was 34 percent better than state lighting power density requirements. The interior lighting project also included the addition of occupancy sensors installed in shared spaces. Next, all the exterior lighting fixtures were

upgraded to LED fixtures around campus. A 35-kilowatt solar photovoltaic system installed in 2002 was updated in 2015 to restore production capacity.

Several classes partnered with Waste Management to create a better recycling program on campus, learning about the importance of reducing the amount of trash sent to landfills. TOW participates in Waste Management's yellow bag program, in which the hauler provides the school with 46-gallon yellow bags for food waste that are stationed around the perimeter of the student eating area and in the food service kitchen. The food waste from the yellow bags is eventually liquefied to create engineered bioslurry, which is useful in creating various products.

Environmental education through art at Top of the World Elementary

Every classroom has recycling bins, ensuring all paper waste is being recycled as well. TOW uses 1:1 devices and Google Documents; students do many assignments online to save paper; and teachers share documents online in professional learning communities. PTA, principal, and district announcements are all sent digitally, reducing paper waste. Students spearheaded a campaign to divert uneaten prepackaged food items from the trash cans into a collection bin that gets donated to the Laguna Beach Friendship Shelter. These multi-pronged efforts have greatly reduced the amount of trash TOW is sending to the landfill. Students are paying it forward by helping the less fortunate and positively affecting the environment.

TOW partners with local agencies and initiatives to continuously promote improved sustainability efforts. For example, the school works with the Laguna Beach County water district to implement measures aligned with water-wise landscaping and garden applications. In 2017, TOW replaced three portable classrooms with new, permanent, modular buildings. The buildings consist of five classrooms in the company's Gen7 series, which is designed to meet Collaborative for High Performance Schools (CHPS) and LEED standards for green schools.

TOW uses place-based environmental education through buildings, grounds, and the neighborhood. Students observe erosion on campus slopes and design solutions, study natural landforms of the adjacent canyon, sample soil types around campus, use the solar power generated from a demonstration solar array on the

shed roof to power a blender and make smoothies and run the irrigation system, take phenology observations of California poppies in the gardens and report to Project BudBurst, and collect weather data for analysis through a schoolwide WeatherBug system on building roofs.

TOW's Student Nutrition Advisory Committee (SNAC) is a PTA committee focused on promoting health and wellness at schools and in the community, with a particular focus on promoting healthy eating and body image. The committee meets quarterly with administration, parents, and nutrition services. SNAC actions include attending the 2017 Good Food Showcase, the 2017 California Farm to School Conference, and the 2016 Edible Schoolyard Academy. SNAC programs include Harvest of the Month and a range of parent education efforts. TOW was recognized by the Orange County Register for the "Freshest Meal" in the elementary school category in September 2016.

TOW has numerous opportunities for stakeholders to meet to discuss, plan, and implement ongoing green efforts. These initiatives are discussed in monthly PTA meetings, weekly staff meetings, school site council meetings, and on a nutrition committee that meets quarterly. TOW's current recycling program came out of ideas suggested by staff and parents. Interested stakeholders met and brainstormed how to implement the program. Staff and parents reached out to community partners including Waste Management and the Laguna Beach Friendship Shelter to help work through the logistics. TOW's green efforts are advertised to all stakeholders through garden tours at Back to School Night, in the principal's weekly newsletter, and whole-school assemblies.

Maple Village Waldorf School, Long Beach, Calif.

Teaching children to live in harmony with the Earth

Maple Village Waldorf School (MVWS) opened in 2007 with these aims: little to zero waste; low energy and water usage; whole foods; farm to table education; copious outdoor time; physical activity, rain or shine; students and teachers with a balance of heart, mind, body, and spirit; and a reverence for others and the environment. MVWS opened on its rented site using only two rooms and a courtyard. Today, the school uses 16 rooms and has undergone three play yard expansions, removing turf to build a natural playground of mulch, wood poles and stumps, tires, climbing ropes, sand, and multiple gardens. Enrollment has exploded from an initial eight students to 161 from toddler through eighth grade.

The school is proud of its energy use per square foot and per occupant as well as its environmental policies and performance. Although it is hard to show improvement over time with such a low baseline, the accomplishment lies in being able to sustain such a low rate even as square footage increases each year. MVWS benefits from education and partnerships with Long Beach Environmental Services; Long Beach Office of Sustainability; California Department of Public Health, Healthy Cleaning for Asthma-Safer Schools; Rain Barrels International; Algalita Marine; Tree People; Grades of Green; local farms; as well as nutrition, yoga, meditation, movement, and counseling professionals.

Maple Village hired a gardening teacher who runs a local farm and built a dedicated outdoor garden classroom. Each family is instructed in packing zero waste lunches, and there is 100 percent compliance. Cooked meals in all early childhood classes are served in reusable ware that is washed by the children and set out to dry. All serving ware for daily use on campus is reusable, and is compostable at larger events. Leftover vegetables and fruits are placed in a vermicomposting bin. Paper and cardboard is repurposed into crafts or recycled. As a result, MVWS is nearly a zero waste school, diverting 95 percent of waste. The amount of landfill trash produced per person per month is less than 1.5 milk jugs.

Maple Village students walk to Colorado Lagoon

As a technology-free school, there is very little electrical use in classrooms. Hand sweepers are used more than vacuums and hand cranks are used for grinding grains. Toys are battery-free and made of natural materials, and art supplies are plant- and beeswax-based. Cleaning supplies are green-certified or homemade from natural ingredients, and MVWS has switched to microfiber cloths for dry cleaning. Chalk, cinnamon, and essential oil are used instead of pesticides. Parents come from all over the city, yet nearly 70 percent of transportation to and from school is alternative (without even including electric/hybrid cars). The city of Long Beach just completed improvements to nearby streets, creating a “Bike Boulevard” including roundabouts, traffic circles,

landscape planting, and access ramps, making it even easier for families to walk and bike to MVWS.

Maple Village entered the Cool California Energy Challenge for two years and won first place for the City of Long Beach both times. There is lots of natural lighting, so overhead lights are rarely turned on. Watering is done by hand, rain is caught in barrels, and gray water is used. Notices are electronic rather than paper. Families are educated in packing healthy lunches, early childhood cooks daily with organic grains and produce, and children participate in all preparation. Parents provide healthy food at faculty meetings and all school and community events. Teachers read, sing, move, meditate, and craft together, as do the children! MVWS has faculty yoga every Friday after school.

There are four parks within walking distance. In addition to daily walks for kindergarten, all grades walk to the park every Thursday to spend half of their day outdoors, and average 9.5 hours a week of physical education. During these experiences, teachers engage students in the observation of nature, model environmentally conscious practices, and share their view of the world as an interconnected place. The children come to understand their interconnectedness and the need for sustainable practice—like reusing, recycling, and classroom chores—that follows from that understanding. This aperture of experience is widened as students study local surroundings, then their state and its history, and then the nation's geography and weather patterns, and later, world history and climate patterns. As this understanding widens, so does their sense of responsibility to care for the environment, and they take on more cleaning and care responsibilities in school shared spaces and the neighborhood, then eventually beyond school grounds.

Teachers employ a place-based curriculum integrated across all subjects rather than taught in isolation, infusing students' lives and learning in science, geography, history, math, and language arts. This addresses the whole child, attends to the students' cognitive, emotional, and aesthetic needs, consistently connects them with the natural world, and allows them to experience hands-on environmental projects. Whole process curriculum (e.g., grinding wheat berries to make flour to then bake bread) allows students to gain understanding of food origins and an appreciation for whole foods. MVWS participates in a farm to school program to provide local, fresh food. Field trips to local Farm Lot 59 highlight biodynamic and other innovative farming techniques; and Lazy Acres Farm donates local organic produce. The school maintains a "picking garden," from which children can eat produce and herbs at will. All purchased food is organic and in bulk to reduce packaging waste.

The MVWS STEM by Nature initiative trains and supports teachers in the use of the natural world, school grounds, and field trip experiences to teach STEM content and

skills. Teachers use environmental phenomena to engage the students in inquiry-based lessons. Through activities such as composting, rainwater capture, and gardening, students use the school grounds and surrounding community to deepen their understanding of the natural world. Some examples of this approach include root system identification through flower observation, the study of different cultures throughout time, and the environmental resource availability that made these settlements possible. Students are in regular contact with experts in green technology and careers. Guest speakers invite students into their worlds and share their work and projects with them.

Students knit for the homeless, adopt families during the holidays, sing at hospitals, make thank you cards for volunteers, collect cans and toys for food banks and help to unload and stock the shelves monthly. Students learn to be stewards for the environment by planting, watering, harvesting, composting, vermicomposting, and only picking from the picking garden. Eighty-five percent of plants grown at school are edible and 15 percent are California native, including those in an NWF certified wildlife habitat. MVWS received California Green Ribbon Schools Gold Level recognition in 2016 and 2017 and was selected by California State University, Long Beach to be the subject of a project in the Master of Business Administration program with a focus on sustainability. This year, MVWS became a "Recognized Green Business" with the City of Long Beach.

Jack London Community Day School, Valley Glen, Calif.

Building a more peaceful, just, and sustainable world

Jack London Community Day School (JLCDS) is a small high school in the Los Angeles Unified School District, the largest school district in California and second largest in the nation. In this context, community day schools serve mandatory and other expelled students, students referred by a school attendance review board, and other high-risk youths. The JLCDS campus is co-located in the back parking lot of Grant High School, a larger comprehensive school. At JLCDS, sustainability is not only about the environment, it's also about empowering students to redirect their lives and learn to become positive agents of change through an ethic of environmental citizenship. In 2013, JLCDS put sustainability principles into action by greening the school, converting an 18,000-square-foot asphalt parking lot campus into a garden. When the project began, there was not one square inch of soil. From the start, the garden has been student-built and maintained.

The heart of JLCDS is its Peace Garden, where the essential question is, "How can we build a more peaceful, just, and sustainable world?" Implicit in sustainability are

the concepts of food justice, wellness, and meeting the needs of the poor, issues many JLCDS families face. The Peace Garden serves as a small demonstration of an urban, edible garden for the community. Spaces in front of classrooms are used to show what individuals can do even if all they have is a small balcony on which to grow food in recycled containers. The garden is an advanced certified wildlife habitat, a pollinator habitat, and a Monarch waystation.

Jack London practices sustainable, urban horticulture as a way to meet the needs of the 21st century and manage an increasingly urban environment. Much of the effort involves container gardening on asphalt, the quintessential urban environment. The garden consists of 30 raised beds, two asphalt cuts, 47 fruit trees, and numerous pots. JLCDS designed and built their own raised beds. Vegetables, herbs, berries and fruits are grown organically and the garden literally bursts through the fences.

To maintain a safe habitat for students and wildlife, JLCDS uses a variety of innovative, nontoxic pest management strategies. JLCDS practices WIND, the school's own sustainable gardening principles: W is for Water and Soil—mulch away to save water and feed the soil; I is for Insects—plant a butterfly garden; N is for No Chemicals—resist the urge to spray; and D is for Diversity—go native and grow heirloom crops. JLCDS uses a blend of native plants and heirloom crops to create a diverse floristic tapestry that nurtures the life above ground, in mulch, and the soil food web below. Composting completes the nutrient cycle.

JLCDS students plant spring color bowls

JLCDS has an active industry advisory committee, with members from Armstrong Garden Centers, Cottonwood Urban Farm, Theodore Payne Foundation, TreePeople, Two Dog Organic Nursery, and University of California Cooperative Extension Master Gardeners. Students have the opportunity to hold paid internships in the garden with the support of Jewish Vocational Services, through the County Probation Department. The industry advisory committee serves as the JLCDS green team, and is the formal forum where everyone can meet to discuss, plan, and implement ongoing green efforts.

Jack London partners with California State University, Northridge via the MOSAIC program; all students participate in health walks, hiking trips, and university field trips, as well as healthy mindset and decision-making workshops. Each week, mentors provide students with a 60-minute workshop on making healthy choices. The school also participates in California Thursdays, a collaboration between the Center for Ecoliteracy and a network of public school districts to serve healthy, freshly prepared school meals made from California-grown food. More than 70 percent of food served in the district comes from growers in California.

California's Environmental Principles and Concepts are integrated schoolwide through the sustainability theme. Each teacher augments his or her curriculum with sustainability concepts in ways germane to their discipline. In English, students read and write about sustainability, gardening, and the environment. In math, students analyze germination rates, green waste production, and pollinator counts. In science, students study botany, cultivation, propagation, adaptation, and environmental science. Across the curriculum, teachers use articles relating to sustainability from the California History-Social Science Project's Current Context, which put current environmental events in their historical context.

The required course of study at JLCDS includes two years of science plus two years of horticulture, and Junior Master Gardener certification. Science and horticulture curriculum are integrated into a single four-year career and technical education pathway combining environmental science and sustainable landscaping. Sustainable, urban horticulture is studied as a way to meet the needs of the 21st century and manage an increasingly urban environment without compromising the ability of future generations to meet their needs.

The Ornamental Horticulture pathway at JLCDS provides extensive opportunities for students to engage in physical activity in the garden. At JLCDS, the garden is entirely student-built, planted, maintained, and sustained. Students are required to spend at least 50 percent of their horticulture course work in supervised, outdoor, horticultural practice. The garden is the outdoor classroom for the horticulture program. As an edible instructional garden, it helps to articulate nutrition education, healthy eating, and food security. In February 2018, a greenhouse and outdoor learning center was added for additional outdoor learning opportunities.

Jack London is adjacent to the Tujunga Wash Greenway, so students study the native trees that grow there and learn about the Los Angeles River watershed. Adjacent to the Greenway, JLCDS has a USA National Phenology Network (USA-NPN) Phenology Walk and Garden, a phenology monitoring site. Its purpose is to engage the community in citizen science, reconnect the public with nature and its cycles, encourage interest in local species, and educate people about climate change. In it, JLCDS grows five of the USA-NPN target plants native to the area, for

phenophase observation and reporting to the USA-NPN database. The plants are also part of the insectary garden and include a native narrow-leaf milkweed and California buckwheat, a keystone species in the area and an important insect food and nectar source.

A student leadership eco-club sponsored by TreePeople meets bimonthly and is the student forum for the program. Every student is part of the eco-club, and every student has input into the decisionmaking process. The eco-club capitalizes on the "natural leaders" at JLCDS, which is an apt description of many at-risk students. Annual environmental service learning projects are part of the eco-club program. The eco-club also is the Eco-Schools Eco-Action team and Roots & Shoots group.

The experience of working together in the garden plays an important role in keeping high-risk youth from drifting further into trouble. As one student wrote, "The garden brings everyone together. It helps us learn gardening skills and teaches us how to grow healthy food. Peace means coming together as one. Working together in the garden helps us to learn how to solve conflicts."

Tahoe Truckee Unified School District, California

Integrating a precious natural element into educational goals

The Tahoe Truckee Unified School District (TTUSD) serves approximately 4,000 students at five elementary schools, two middle schools, three high schools, and one alternative school. The district encompasses more than 720 square miles in the Sierra Nevada Mountains, including the north and west shores of Lake Tahoe.

Among the district's vision and beliefs is a foundational commitment to reducing environmental impact, improving health and wellness, and building environmental literacy. TTUSD Belief #7 states, "The Lake Tahoe region is precious, and we value our physical environment and integrate this element into our educational goals." A unique partnership exists between TTUSD and Sierra Watershed Education Partnerships (SWEP), a community-supported 501(c)(3) nonprofit. SWEP promotes environmental stewardship by connecting students to their community and local environment through comprehensive watershed education and service learning. SWEP, school administrators, and teachers work to promote environmental education and lead sustainability clubs districtwide.

The first sustainability club in TTUSD was started in 2010; by 2013, clubs were introduced across all sites. TTUSD has a certified energy manager to oversee energy and water conservation programs. The district has a long history of

conservation efforts, dating back to 2002 when the district adopted cool roof standards. The district's first green building project was built in 2005; Alder Creek Middle School received Collaborative for High Performance Schools (CHPS) verification, exceeding state energy requirements by 25 percent. All current projects are designed to LEED Silver standards. TTUSD subsequently implemented a conservation committee, began benchmarking resource use, and adopted energy conservation guidelines. Lighting retrofits, occupancy sensors, boiler replacements, and an energy management system are examples of projects undertaken. In 2012, TTUSD began retro-commissioning projects. The district has used Lucid BuildingOS since 2014, and an online dashboard is available to the public.

Tahoe Truckee students monitoring water quality

Tahoe Truckee demonstrated a 25 percent reduction of water consumption between the 2012–13 and 2016– 17 fiscal years. Efforts to reduce water use include using reclaimed water for the transportation facility's bus wash, outfitting irrigation with smart controllers, upgrading restrooms with low-flow fixtures, making auto-off nozzles standard attachments on all hoses, replacing spray irrigation with drip, and implementing a leak detection program. In 2015, the district adopted water conservation guidelines and implemented a strict schedule of watering days. In 2017, the district adopted low impact development standards and implemented these at two construction projects.

As a farm to school district, salad bars using locally grown produce are at all sites and preference is given to purchasing produce grown within 150 miles of district boundaries. Since 2006, TTUSD has implemented a harvest of the month program, which features California-grown produce for the purpose of engaging students in the world of agriculture and nutrition. Food Services works in partnership with two dietitians from Tahoe Forest Hospital to coordinate a robust nutrition education program. At every kindergarten through eighth grade school campus, every month, students receive fresh produce in the classroom and taste test a recipe using the harvest of the month featured fruit or vegetable. As part of the nutrition program, over 100 parent volunteers are organized each school year, and provided training, curriculum, and a school schedule to provide lessons in the classroom. Parents work closely with teachers to integrate nutrition into daily core academic curriculum in addition to a standard nutrition education lesson.

A project-based learning program called PEAK (Precision, Endurance, Action, and Kindness) is offered as a two-year project-based learning program for ninth and 10th graders. This program includes PEAK versions of both river ecology and marine biology courses offered in the district. Through an integrative learning approach, students are involved in community sustainability efforts.

In the Winter Discovery Program led by SWEP, third through fifth grade students visit an official "Snow School" site up to three times within three months for three different winter ecology lessons. The Snow School is located next to a community cross country center. Students cross country ski for an hour and then do a winter ecology lesson with a SWEP instructor in a heated yurt supplied with tables, chairs, monitors, and microscopes. These annual winter ecology field trips combine ecology lessons, science explorations, and lessons on climate change, snow, and water issues with cross country skiing and basic winter skills. An annual science, technology, engineering, arts, and math (STEAM) fair, now in its sixth year, is open to all students, parents, and community members. The event celebrates civic and community engagement projects integrating environmental and sustainability concepts such as eco-recycling and solar-charged cars and devices, and averages close to 700 attendees. Local businesses and organizations set up interactive booths for attendees to engage and learn about STEAM application to the real world.

CTE Pathways students have the opportunity to publicly exhibit the culmination of their work at the STEAM Fair as well. At the community's annual Earth Day event in Squaw Valley, over 200 hundred local TTUSD students participate with fellow students and teachers to share sustainability efforts that schools and students are making in the areas of energy, waste, and water conservation. Students run educational outreach booths with hands-on activities and lead musical performances. Sustainability club members from at least eight clubs in the district put on a popular Trashion Show in front of an audience of hundreds of local adults and children. TTUSD is committed to an educational environment that not only sustains the existing natural beauty, but models and provides sustainability enriched learning opportunities for students so they can productively contribute to and make informed decisions as citizens of the 21st century.

TTUSD received recognition as a California Green Ribbon Schools Gold Level district in 2017.

Colorado

Central High School, Grand Junction, Colo.

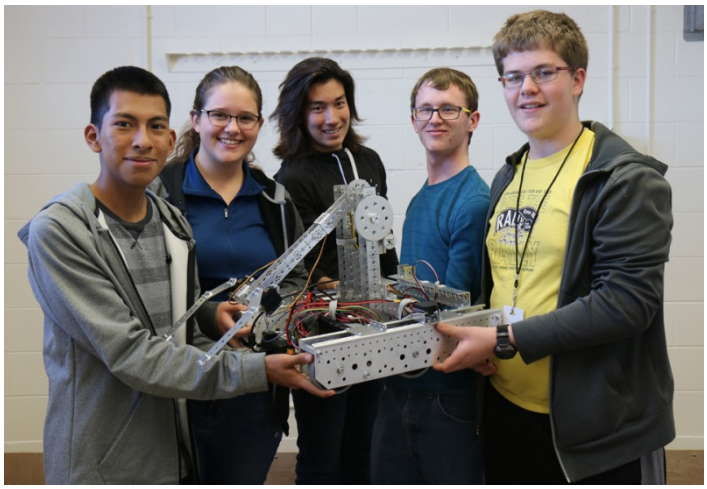
Solar powerhouse on the Western Slope

Central High School was built in the 1960s, and after remodels and expansions, the current building has been modernized and retrofitted to increase efficiency and decrease energy usage. Opening skylights, retrofitting faucets, and changing student and staff behavior are just a few examples of how Central High School has evolved. Over the past 10 years, Central has undergone profound and transformative changes, including changes in structure, policy, curriculum, and student involvement, which reflect a team approach as well as a sincere desire to be innovative, environmentally responsible, and high achieving. The incredible support of the school district in Central High School's efforts has guided the school on its journey, and each year provides new opportunities to expand. The school community truly believes in continuous growth, and Central hopes to continue this work to continuously improve and positively influence more students, staff, and community members along the way.

Central's biggest accomplishments in terms of reducing environmental impact and costs have been its significant reduction in energy use of 39 percent, greenhouse gas emissions reduction of 42 percent, water use reduction of 36 percent, and a decrease from 1489 individual fluorescent lights to 154. Furthermore, 58 percent of Central High School's electricity is renewable, due largely to roof-mounted solar panels. These accomplishments are monumental because the school building originally was constructed more than 50 years ago. Greenhouse gas emissions, water quality and conservation, waste management, and alternative transportation have all been aggressively addressed at Central, and significant strides made through team efforts, data tracking, clear protocols, and communication. One of the best examples is when the school administration, athletic/scheduling secretary, science department chair, and lead custodian met with district partners to plan a two-month period in which the building committed to not turning on the second air conditioning compressor, saving some $3,500.

Furthermore, an exciting blossoming partnership between the special education and science departments is representative of the team feeling at Central. The plan involves not only relocating the school's current greenhouse to the planned outdoor classroom, but also team teaching efforts so that students in environmental science classes can mentor and work alongside students in special education classes who are learning about growing plants. The plan includes the building of a compost pile, intended to be the precursor to cafeteria composting. This initiative will be the basis of several interdisciplinary and service-oriented projects in the building. The

improvement to student and staff health has been thorough and purposeful throughout the school building. There are specific protocols in place in the building for all exposure to potentially dangerous or hazardous materials, and those protocols are meticulously followed and enforced by all trained teachers, custodial staff, and the district's environmental safety director. Routine inspections and tracking have helped to make the building safe, clean, and a healthy place to be. In addition to these processes, school staffers have worked to promote healthy living, both physically and mentally. Central High School is very proud of its physical fitness commitment of 225 minutes per week; its staff's monthly participation in Wellness Challenges; and the requirement that all students take advisory classes for 90 minutes a week in which the curriculum is based on the National Association of Counseling Standards. The school is committed to a strong awareness of social and emotional issues, including suicide prevention and depression signs. The Central culture places a high regard for healthy living from a variety of perspectives, and the staff and students support each other in reaching goals and healthy living.



Robotics class at Central High School

Another exciting component of Central High School's commitment to student and staff health is the plethora of outdoor education, exercise, and recreation activities. In addition to physical education programs, Junior Reserve Officer's Training Corps, and athletic programs, Central offers a recreation club that plans monthly activities, including kayaking, paddle boarding, skiing, snow shoeing, river rafting, hiking, and biking. Approximately 30-50 students participate in the outdoor recreation club, in which students learn about healthy opportunities in an outdoor setting. A component of each outing is teaching stewardship and ecology of each area visited. Another opportunity at Central is the Outdoor Wilderness Leadership in Science – OWLS – program. This STEM discovery class, designed for juniors and seniors, teaches participants science concepts and leadership skills that prepare them for an opportunity to become camp counselors for a weeklong wilderness camp for sixth grade students. Students learn the curriculum that is taught at the camp, and they work with wildlife biologists and other natural resource professionals as they help teach and mentor camp attendees.

A tremendous amount of work has been done by staff in an attempt to provide effective environmental and sustainability education. All students at Central are required to take an environmental science course or AP Environmental Science, typically during their freshman year. This exposure to units such as natural resources, weather and climate, ecosystems, populations, and interactions has stimulated tremendous growth in student understanding of the need to be environmentally responsible and civic-minded as they approach efforts to minimize environmental costs and impact. This approach extends beyond the classroom. The green team at Central is a student-run organization and a direct result of this dedication to environmental science curriculum. The "Year of the Green Warrior" has become a catchphrase at Central, and all student leadership organizations have been invited to participate. This movement has included staff, district personnel, students, and local businesses.

One of the most visible and serious academic changes made at Central is a partnership with the National Institute for STEM Education. Central is in the process of becoming the first STEM-certified high school in Colorado. The process for this certification includes significant commitment by the staff to embrace and foster STEM thinking skills through all classroom structures, course design, teaching strategies, and cross-disciplinary units. At this time, environmental topics of study such as sustainability and the environment are providing contexts for team teaching between teachers of science and other content areas such as math and English teachers.

In conclusion, Central High School community has worked diligently, and will continue to work diligently to make all of Central's environmental plans a reality, and to continue to provide avenues and opportunities for students to thrive in a safe and positive school culture that is committed to academic excellence and environmental understanding.

Mackintosh Academy, Littleton, Colo.

Small school with a big heart and deeply held conviction

On a snowy day in May 2015, six seventh grade students at Mackintosh Academy in Littleton, Colorado, flipped the switch to turn on solar panels on all three campus buildings. The year before, as part of their International Baccalaureate (IB) Exhibition project, these same students won a $96,000 grant from the State Farm Youth Advisory Board to bring solar power to Mackintosh. Installing solar panels brought monetary savings and a reduction in carbon footprint to Mackintosh Academy Littleton, but, more importantly, it lit the way to a living vision of the school

as a smart village that strives every day to be a wise, compassionate, collaborative, innovative, diverse, and sustainable center for teaching and learning. Solar panels are an exciting and useful technology, but their influence at Mackintosh extends far beyond the clean energy they generate. Those original six students established the basis for a Solar Scholar tuition assistance fund, seeded with the savings from the solar panels. As a result, the funds now support four Solar Scholars at Mackintosh.

For the solar power project and ensuing environmental initiatives, Mackintosh Academy Littleton was awarded the President's Environmental Youth Award by the EPA in April of 2016. In addition, the school has been awarded two grants from the Colorado Garden Foundation, for researching and planting native plants as a sight barrier, and for installing a hydroponic system in the greenhouse. Students were involved actively in planning and implementing both of these projects. In the fall of 2016, Mackintosh was invited to participate at the bronze level in the Colorado Department of Public Health & Environment's Environmental Leadership Program (ELP). In 2017, Mackintosh applied for and received acceptance in the ELP at the Silver level, and the school is already taking steps to go for Gold.

A Mackintosh family on Bike or Walk to School Day

Students have spearheaded efforts to make the switch to reusable plates. A Parent Council initiative has resulted in a water bottle filling station in the gym, and the avoidance of some 500 plastic bottles. The school also has robust single stream and glass recycling programs. Well-used blue recycling bins sit in every classroom and, on Wednesday mornings, parents and children drop offbags of bottles and jars for the glass recycling program. Students recycle school supplies, including used notebook pages. The school introduced energy-efficient windows, insulation, solar tubes, venting skylights, and motion-activated LED lighting in the most recent capital improvement, and makes use of sustainable cleaners. Students can be found casting shadows along the water of the school's popular solar-powered outdoor fountain.

Other student-driven initiatives include a terracing erosion control project, gardening tasks, and a greenhouse with an elaborate hydroponic system and student-built supports. Eighth-grade gardeners pick tomatoes and basil and then sell them in the

car line to support additional greenhouse projects. The use of organic fertilizers and community garden potlucks to suppress weed growth is critical, as parents and students pull weeds and trim bushes year-round.

In addition to a vigorous physical education curriculum, students enjoy outside lunch and recess every day. Middle school students do Mack Movement before classes, and all students walk the student-designed meditation path.

As an IB school, Mackintosh supports environmental education with a series of speakers on environmental topics, as well as courses such as the popular How We Share the Planet class. Students use repurposed materials to create designs for energy-saving devices, and perform an annual solar inquiry to analyze data from the solar panel monitoring system and figure out how much energy the school generates from the panels. Mackintosh's middle school grades participate each year in the World Affairs Challenge, recently winning an award for presenting an idea for using aquaponics to address food insecurity in Puerto Rico. Students also take personal responsibility for saving power with all-school Conserve Energy days, during which the school community disables "energy vampires" in classrooms.

The faculty green team promotes environmental undertakings and focus, and plans activities for the annual Earth Day festivities and community service activities, which take place on and off campus. The school has adopted the nearby Ridgeview Park, and students take responsibility for keeping it clean, picking up trash, and overseeing cleanliness.

The Mackintosh community is living the values of sustainability and environmental awareness. Students continue to be the driving force behind what the school community is doing and why. Starting with the hard work and clear vision of those six students, Mackintosh students are intricately involved with, and initiate many of the examples of the school's sustainability. These students will forge the path in future endeavors, expand Mackintosh's green team, and continue to incorporate sustainable components, like a green roof, into the school's proposed capital expansion. Mackintosh is a small school with a big heart and a deeply held conviction that will lead the way to a brighter future. Mackintosh's students have sounded a clear call to action that the adults in the Mackintosh Academy community are excited, and, in fact, compelled to follow.

Connecticut

Western Connecticut Academy for International Studies Elementary Magnet School, Danbury, Conn.

Growing green thumbs, very early

Western Connecticut Academy for International Studies Elementary Magnet School (AIS) is a publicly funded kindergarten through fifth grade magnet school that serves 391 students from 11 towns. Danbury is an urban city, but AIS is located on Western Connecticut State University's Westside campus, adjacent to a large nature preserve. AIS engages students in a curriculum and a structure that encourages them to develop and use a global perspective early in their educational career. The international theme, woven through all subjects, is supported with units of study based on countries, continents, and cultures, engaging young students' innate curiosity and openness to learning. Spanish is the world language taught daily at AIS, beginning in kindergarten. Environmental literacy is carried out through all curricular disciplines at AIS, including art, music, and physical education.

An early participant in the Connecticut Green LEAF Schools program, AIS had seven teachers enrolled in a two-year sustainability professional development opportunity. Educators have learned how to incorporate school gardens, schoolyards, and other school building and grounds features into their curriculum. The school participates in both Jane Goodall's Roots and Shoots club, as well as John Farrell's Bridges of Peace and Hope.

The green team visual arts teacher skillfully incorporates math, science, and international studies, linking artistic expression to the larger ideas of how education affects student learning and student interests, which guide their choices. While all AIS students create works and learn about light and color (light refraction, formulas), shapes, patterns, sense of space and depth, and texture, each grade level has its own unique lessons based both on skill and on knowledge that increases over time from year to year. For example, kindergarten students compare and contrast fairytale toy bears and the real-life animals. In addition to learning about the hibernation cycles of bears and other animals, kindergarteners research the natural environment of animals, and study the varied weather patterns of New England in the month of March. Building upon their past experience, first grade students study and use geometric, organic, and abstract shapes to create their own version of the African Savannah. Second grade students study Van Gogh and his Sunflower paintings, then paint from observation of still-life bouquets. Afterward, students dissect the flowers to learn about the different parts of a flower and to understand their function.

Each grade level has a specific garden to prepare, plant, tend, and close. Students in kindergarten and first grade learn about the parts and purpose of plants; they learn basic tending techniques; and they begin to look for patterns and to notice the natural world around them. They begin to understand that bright colors attract pollinators and that annual plants need to be planted yearly, while perennials come back every year. They begin to see the mutual benefits among wildflowers and bees and butterflies. Second and third grade students take the process full circle, from learning how to cultivate healthy soil to planting vegetables and fruits for sustainability. After harvesting, students may taste their fruits, vegetables, and herbs, which instills a lifelong interest in gardening and healthy eating habits. Students also learn different techniques to gardening, such as three sisters, four by four, raised beds, and companion planting. Fourth grade students focus on the purpose of maintaining healthy soil, and herbs that support insects and pollinators. Fifth graders lengthen the growing season through hydroponic farming indoors. They learn how to work with limited planting space, using water and nutrients to sustain plant life. They grow their own flowers for school graduation, and then continue take them home and transition them into soil. During the summer, AIS student and parent volunteers maintain the gardening program under the direction of the school's green team leader. While the students and their families consume some of the produce they have grown, the school also donates a significant portion to area food banks, shelters, and other community services locations. Then, when the students return in the fall, they close the garden. In 2016, AIS received a grant through the Whole Foods Kids Foundation School Garden Grant Program. AIS maintains a noteworthy partnership with the local Whole Foods Market that affords students with the opportunity to visit the market, learn about nutrition, how far foods travel, and the reasons to buy locally. AIS follows the National School Lunch Program and salads are offered every day.

AIS students flying their peace dove with famed primatologist and anthropologist Jane Goodall

A spring and fall walking program offers AIS students and families an opportunity to start the day off in a healthy way. A student club was featured in local newspapers as members sought to raise money for recess equipment in an effort to promote the health and wellness of students. AIS students are encouraged to participate in many outdoor activities throughout the school year. Students are encouraged to wear sunscreen to school and are allowed to bring additional sunscreen or wear

hats or long sleeves to protect themselves from overexposure to the sun. Once students reach the fourth grade, they are given the results of their physical fitness assessment. Using the rubric provided, they determine their current level of fitness and then set individual goals for improvement in each of the areas of fitness on which they are tested. Students also receive a handout of the FITT (frequency, intensity, time, and type) method to design their fitness plans.

The school celebrates Earth Day with an annual schoolwide field trip, to view the latest DisneyNature Earth Day movie release. Since 2011, AIS students have seen: Earth, Oceans, African Cats, Chimpanzees, Bears, Monkey Kingdom, Born In China, and Dolphins. While all AIS students separate out recyclable plastic from food and paper products that are appropriate to compost, a specific group of students collects and checks the materials to ensure that they are indeed compostable. Fifth grade students work with custodial staff to deposit compost into bins, balance the compost with browns, and turn the bins to promote decomposition. AIS students and staff also maintain compost through the school's vermiculture program. Students learn that worms not only increase the amount of air and water in soil, but also produce castings that are full of nutrients for the soil. They also enjoy reading about the daily adventures of a worm in Doreen Cronin's *Diary of a Worm*, which is written from the worm's perspective.

Second grade students connect their classroom learning about erosion to the real world during a field trip to Sherwood Isle. While there, students participate in hands-on activities that show how the earth's surface changes because of the effects of weather. AIS third grade students visit the Old Quarry Nature Center where they learn about how rock was mined in the quarry and used in local construction, the effects of erosion, as well as how the removal of the rock changed the natural landscape of the Quarry. A representative from the Housatonic Resource Recovery Authority visits AIS third graders every year and students learn about reducing and reusing and how trash is burned and turned into energy, creating problems in the form of toxic ash and air pollution.

AIS fourth graders have the unique opportunity to participate in the Trout in the Classroom program, through which they learn about raising and releasing trout into local waterways. They monitor the temperature and pH levels of the water; keep the tank dark, which, in the wild, keeps the trout safe from predators, like birds and humans; and share the responsibility of feeding the fish and cleaning the tank each week. Several years ago, AIS students released their trout into the Still River in Danbury where they saw firsthand all of the garbage that had been dumped along and into the riverAIS students subsequently organized a cleanup team with the help of a local business..

In 2017, AIS fifth grade students led the school to install refillable water bottle stations to reduce the plastic water bottles used at the school. Students composed speeches and letters, then presented their arguments to the PTA, and personally spoke with the PTA board members to advocate for reducing plastic water bottles at the school.

Having a variety of wireless devices offers children the opportunity to enhance and enrich their education through independent and guided learning explorations, while reducing trash and paper waste. To reduce paper being sent home to families, AIS has incorporated school messenger, automated calls, Facebook, email, and Remind application communications. In addition, AIS students can work on individual and group projects through Google Classroom from anywhere and share information virtually.

In addition to teaching resource management, the school and district facilities team works tirelessly to save resources and save money. To accomplish this, AIS has a building management system which controls both the HVAC and outdoor lighting. Timers on outdoor and setbacks when the building is unoccupied conserve energy. The school also has carbon dioxide sensors built into the air handlers, so that outside fresh air is added based on both need and room occupancy. AIS and the Danbury Public Schools have committed to use only green products for cleaning. From the general all-purpose cleaner, neutral cleaner, glass cleaner, floor finish, floor stripper, and restroom cleaner used, only approved certified products are in the buildings. There is also a water filtration system which is serviced on a regular basis by Danbury Public Works.

To encourage recycling, bins are placed in each classroom, the main office, and in teachers' lounges. Recently, all AIS students participated in a recycling contest after students from a local high school conducted an informative training session. Families are encouraged to carpool during school events, such as family picnic day, meet the teachers night, and school concerts. The school district buses transitioned to propane fuel last year and buses are prohibited from idling their engines in an effort to reduce fuel usage and reduce air pollution.

Delaware

Emalea P. Warner Elementary School, Wilmington, Del.

Exploring, discovering, and sharing in school and throughout the community

Warner has gone from a school that did not recycle at all, to a school that has placed recycling as a top priority amongst its students and staff. Every classroom now has a recycling bin for paper, plastics, and aluminum, and the school recycles approximately 130 pounds of classroom material on a weekly basis.

A green team of students (who are chosen through grade level writing prompts) educates their peers, and staff, on the importance of recycling. The team teaches everyone the importance of saving energy as well. Simple things, like turning off a light when you exit a room, or unplugging an electronic device when not in use, are helping to save hundreds of dollars per year on electric bills. Warner currently has an ENERGY STAR rating of 99.

In making a conscious effort to reduce water usage, Warner recently upgraded the toilets and sinks to automatic, low-flow selections. They have also upgraded water fountains to have refillable water bottle stations. The school has enjoyed a sharp drop in water usage, having used 318,000 gallons in May 2011 and only 146,000 gallons in May 2016. One goal for the upcoming year is to use grant money to purchase a reusable water bottle for each student in the building.

Warner Elementary students oversee lunchroom recycling collection

The school garden produces hundreds of pounds of vegetables a year. These vegetables are used in the school's kitchen and served to students. Warner also encourages neighbors to partake in the harvesting of food from the garden as well.

Warner partners with the American Lung Association of Delaware in providing Open Airways for Schools, a program that educates and empowers children through a fun and interactive approach to asthma self-management. The program teaches children with asthma ages eight to 11 how to detect the warning signs of asthma, avoid their triggers, and make decisions about their health."

The NGSS is the curriculum that is used to integrate science across the grades. Students also are engaged in outdoor learning via a school garden based project, The recycling club and ecosystems field work, through which students study and discover the interactions between living and non-living things in their environment.

Warner's STEM program teaches students to be explorers and discoverers who ask and answer questions at the analytical and evaluative levels, students are also able to create models, plan and carry out investigations, use computational thinking skills and construct explanations that includes a deep understanding of real life scientific applications. For example, in creating a model of an ecosystem, the students were able to identify how living and non-living things interrelate. They also carried out an investigation into understanding how water pollution affects aquatic animals by pouring oil into one model of their ecosystem and recording the damage that was evident. Students were then able to explain that the result of their experiments proved how life, physical and earth science are affected by the choices and actions of humans.

The majority of students -- 89 percent -- ride a yellow bus to school. Warner has a no-idling policy, and the vehicle loading and unloading area is much more than 25 feet away from any building air intakes, doors, or windows.

Air quality is monitored every six months and as needed during times of construction or upon request. Air filters are replaced a minimum of every 30 days. Neutral cleaning products are used in the building, and bleaches and other hard chemicals are not used in proximity of the students or staff.

All of Warner's achievements would not be possible without the Delaware Pathways to Green Schools and the National Wildlife Federation Eco-Schools USA programs. These programs help schools to plan and implement programs and actions to achieve goals toward making your school a greener building. Through these programs, the entire student body and staff are aware of the school's achievements and plans for future efforts.

Department of Defense Education Activity

Spangdahlem Middle School, Spangdahlem, Germany

A community of role models and cheerleaders for health and wellness

Spangdahlem Middle School (SMS) is geographically located in the Rheinland-Pfalz region of Germany, which is known for its sustainability efforts and serves as an

ideal model for teachers in promoting sustainability goals and education. Students and teachers alike are keenly aware of methods used in this area to reduce the human footprint on Earth. As students gaze out from the school windows, they observe solar panels and windmills on the horizon. In surrounding local villages, SMS community members participate in the successful and dedicated recycling practices of the German neighborhoods.

Partnering with and learning from host nation Germany allows students and faculty opportunities to be influencers and change agents in the community, the United States, and the world at large.

In partnership with the 52nd Fighter Wing, SMS has implemented and sustained processes that reduce environmental impact and costs. Collaboration with the Civil Engineering office has allowed SMS to collect and analyze utilities data, including water, electricity, oil, and refuse, which reflect notable changes as cost and usage are reduced over time. The school implemented a "Flip the Switch" lights-out plan in the 2016-2017 school year and continued this educational campaign to reduce the use of electricity, as well as closely monitoring the use of water. Recycling plans have been implemented with paper products, and SMS has worked with the 52 Sustainment Services flight to replace plastic ware in the cafeteria with reusable utensils. The school also allocated funding to support the purchase of utensils, with a goal of eliminating the use of disposable utensils by the end of the 2017-2018 school year.

Spangdahlem students and staff have actively implemented the school recycling program

Unique rules require Department of Defense Education Activity schools to comply with federal government purchasing policies. Drivers shut off their bus engines while waiting for students to board the bus. Whenever possible, teachers provide assignments via technology such as Google Apps for Education and Schoology.

School personnel are working closely with the local Civil Engineering squadron and the U.S. Army Corps of Engineers in designing and building a new facility, which is 32 percent complete. The Corps of Engineers has a long-standing reputation for serving the nation and other customers in a collaborative manner that is environmentally and socially sustainable.

Staff and faculty serve as role models and cheerleaders for the health and wellness of each other and the student body. School dances, marathons, fun runs, after school fitness clubs, and a comprehensive physical education program are just a few ways SMS has set a culture of health. Staff and faculty members participate in a weekly bountiful baskets program to support local farmers and provide healthy farm to table meals. Health education classes develop students' health literacy through an array of topics such as disease prevention, food and diet, and health-related careers. Student clubs and parent organizations contribute to all social and physical health goals by sponsoring schoolwide initiatives. One recent partnership between the school, the Army and Air Force Exchange Service, community resources like the health promotions team, and the PTA promoted packing, or purchasing, the fruits and vegetables in the color of the day. The specialist department, the PTA, the school nurse, and the health promotions team also organized an event in September to kick off the 2017-2018 school year with a "More Matters" run to promote more fruits and veggies, more environmental awareness, and more physical activity.

Clubs often promote physical activity and healthy habits with the academic challenge at hand. For example, students attending Fraction Boot Camp were tasked with solving math problems, then jumping up to complete sets of burpees, jumping jacks, and sprints. Healthy snacks make the process less painful. The support staff is an integral part of providing emotional and social support through the coordinated programs offered by the school counselor and psychologist. The school nurse coordinates and provides medical screenings in collaboration with the medical group and for appropriate referrals to meet the medical needs of the SMS student body.

Research, evaluation, and responsible action are themes woven into math, science, health, art, host nation, geography, and language arts lessons to raise a problem solving generation with the necessary skills to control and effect change for a sustainable future. SMS hosts regular visits from environmentally focused professionals and technology-focused career members of the Air Force.

The school was proud to sponsor a districtwide STEMPosium in the spring of 2016, providing STEM projects and learning opportunities while students were "Marooned on Mars." The Mars lander was built by reusing materials such as cereal boxes and cardboard. Staff members have served on the planning committee for the Europe West district STEMPosium for the following two school years which will focus heavily on renewable resources this year.

Not only are students engaged with learning 21st century skills, but they are challenged to study how humans interact with their environments through various civic responsibilities. Two recent contests encouraged sustainable behaviors: A switch plate reminder design contest challenged students to artfully encourage

others to turn off the lights when not in use, and an upcycling contest encouraged students to develop new uses for old items. During the 2017-2018 school year, SMS held a Conservation Convention, during which students presented fresh new ideas about reusing, recycling, reducing waste, and even upcycling.

The after school environmental club researches environmental issues. Students create junk assemblages and self-watering flower pots. Eighth grade health students developed a tool to bring awareness to simple habits that can help reduce impact on the environment. A Green Tips Google Form is being completed by each student through their health class. This is a collection of data to indicate what sustainable habits students and their families already practice, and to encourage them to include more in their lives. This data will be used to collect a baseline of community practice as it pertains to current trends, and will guide future decisions about content integration into the curriculum.

Florida

Gove Elementary School, Belle Glade, Fla.

Better people and a better planet … one school, community, and child at a time

Gove Elementary is a Title I school with over 700 students located in a rural migrant community in Palm Beach County that has been identified as a food desert. Ninety eight percent of students are eligible for free or reduced price lunch.

Raising awareness and implementing strategies for conservation and wellness at the school level and serving as a positive example to the community has been a natural progression in the Whole School, Whole Community, Whole Child approach. Fifty-plus business partners have played an active role in engaging students to be a better person for the planet through wellness and conservation initiatives, while preparing them for future job opportunities. Mentorship by Florida Atlantic University Pine Jog Environmental Education Center (PJEEC) and the district's sustainability and recycling coordinator enables Gove to expand on their goal to grow as a, environmentally aware school.

Gove is a LEED Silver-certified facility that is striving to reduce water and energy usage. The building features ice storage air conditioning, light-colored roofing materials, and low-emissivity windows. Campus landscaping consists of native species, which require less water, and retention ponds minimize the effect of runoff water. Water also is captured in cisterns for garden irrigation. Gove has reduced energy use by 74 percent and water needs by 57 percent in just two years.

The most recent achievement in Gove Elementary School's green journey was being designated a Green School of Quality by PJEEC. This was accomplished through school grounds enhancement, integrating hands-on conservation in the curriculum, and reducing waste. One example of solid waste reduction is a partnership with the local hospital to collect old CDs and plastic bottles to upcycle them for the STEAM hovercraft project. Students and Gove's green partners collected 700 CDs and plastic bottles in 60 days.

Outdoor learning labs at Gove Elementary School include the information station and butterfly houses

The student-driven recycle club is committed to educating peers and staff on recycling properly. They shared their knowledge with the administration, resulting in staff training that included a recycling demonstration. The club entered a Martin Luther King Day parade using the theme of "Recycle to Beautify our Community," through which students educated spectators on the importance of proper waste management. One hundred percent of cleaning products used at Gove Elementary are green certified, and 30 percent of the paper used is fiber from sustainably harvested forests. Batteries from appliances and computers are shipped off to proper facilities for disposal.

Gove offers designated carpool parking stalls, safe sidewalk routes from neighborhoods at least one-half mile on both the east and west sides of the school, and racks to secure bikes. The school has instituted several ecosystem-based strategies to reduce pesticide use, including the purchase and use of ladybugs and marigolds, which are a safe and inexpensive solution to keeping garden pests away. Despite the challenge of being nestled in sugar cane fields that are seasonally burned, Gove Elementary School also has been recognized as an Asthma-Friendly School through the American Lung Association. Daily precautions are taken by the staff, administration, custodians, and the school nurse to keep the environment safe for students.

Gove Elementary is fortunate to have a wellness team that consists of the wellness champion, several teachers, student council members, the school nurse, and members of leadership. The team facilitates multiple health-related services, such

as morning yoga once a week, healthy eating forums, and wellness breakfasts, which also serve as fundraisers for different causes important to the faculty. The school's Positive Behavioral Intervention Support team promotes the connection between the environment, safety, wellness, and the influence these areas have on behavior. They provide materials, motivation, and incentives to encourage staff and students to develop empathy for their community by recycling, conserving water, and reducing energy use.

In 2004, Gove developed its first Walk to School program, involving students, parents, and community partnerships. In addition to meeting the state physical education mandate of providing at least 150 minutes of physical education, Gove provides grant-funded cross-curriculum activity bags and GoNoodle physical activities for classroom teachers to use during their daily physical education block. To increase nutrition education and boost fruit and vegetable consumption, Gove was the first school in the Glades to implement a fruit and vegetable daily snack program. There also is a vegetable and herb garden on campus, which actively involves and inspires students to make healthy eating choices. Gove has received accolades from USDA HealthierUS School Challenge, Fuel Up to Play 60, Let's Move Active Schools, Commit 2B Fit, and the Alliance for a Healthier Generation.

Gove teachers use sustainability issues to teach critical thinking and problem-solving skills. For example, the collection of the school's trash is used in math and science lessons for predicting, collecting, measuring, and reporting data. STEAM teachers collaborate with the science resource teacher to increase student achievement through lessons in a weeklong instruction of scaffolding math, science, language arts, and character benchmarks.

A sustainable schoolyard program is integrated into the curriculum. Through Gove's STEAM classes, the school butterfly garden serves as the ideal setting to learn about a variety of topics and concepts across the curriculum. The garden has also proven an excellent setting for teaching teamwork, empathy, respect, responsibility and building confidence and pride and is used by classroom teachers to reinforce multiple concepts across curriculum including literacy, science and math.

All Gove students participate in STEAM classes in kindergarten through sixth grade, engaging them in projects such as building historical and current relief maps of the Florida Everglades; role playing with turtle models; growing microgreens; creating Everglade model habitats using upcycled materials; dissecting flowers; and participating in eco-dramas to reenact how alligators are keystone species. Students are learning about the relationship between environmental, energy, and human systems, and studying the effect of human activity on our world.

Gove Field trips and special events include visits to Lion Country Safari, SeaWorld, Miami Aquarium, a South Florida Science Center and Aquarium STEM night, Agriculture Safety Day, and a Career Day. To involve the entire school in maintaining a sustainable culture, a student council representative attends all green team meetings and incorporates student input for green initiatives. The goal is for every grade level to integrate environmental education into classroom instruction, teaching students how to make a difference in the world, while creating a healthier learning environment.

Georgia

Charles R. Drew Charter School, Atlanta, Ga.

Real-world project-based learning questions link a school to community

Charles R. Drew Charter School (Drew) opened in 2000 as Atlanta's first charter school, and is an integral part of holistic neighborhood revitalization, developed in order to break the intergenerational cycle of poverty for students and families. Drew first opened with grades kindergarten through five, and has grown over the years; Drew now serves over 1,750 children in prekindergarten through 12th grade, and effectively has closed both the achievement gaps and the opportunity gaps for children from diverse backgrounds. Drew had its first graduating class in May 2017, with 100 percent of the seniors graduating on time and with at least one college acceptance. Forty-six percent of students are eligible for free and reduced price lunch.

Drew's campus has more than doubled in size since the initial opening; the Elementary Academy (prekindergarten through fifth grade) serves approximately 1,000 students in a building that was constructed in 1999. The Junior and Senior Academy (sixth through 12th grade) serves about 750 students in a building that was constructed in 2014 and acquired LEED Gold certification. The Elementary Academy has an ENERGY STAR Portfolio Manager score of 93, and the Junior and Senior Academy scores 88. In new light fixtures, Drew only uses LED light bulbs, and when old bulbs burn out, they are replaced with LED bulbs

The Junior and Senior Academy building is home to an environmental dashboard that gives real-time data on the amount of water and electricity used, along with the amount of solar power captured by the panels on the building's roof (roughly 15 percent of the school's energy needs). This data informs instruction and gives students access to quantitative data for projects and presentations.

Drew installed Astroturf on the Elementary Academy playground in order to reduce the need to water, mitigate the amount of runoff and landscaping needed for general upkeep, and to increase the usability of the playground for students to get physical activity. The Elementary Academy uses city water and has no irrigation for most of the campus. There is a cistern in the courtyard to collect and use that water. At the Junior and Senior Academy, the water in sprinkler system is from reclaimed lake water on the neighboring golf course. At both campuses, backflow filtration protects students and faculty from potential contaminants in water. At the Junior and Senior Academy, all water fountains have water filters and water bottle filling stations.

Drew hosts quarterly Walk to School Days that will soon become monthly events. Drew's long school day (8 a.m. to 4 p.m.) and extensive after-school program offerings mean parents are only making one commute in the morning and one commute in the evening. Also, Drew's charter gives preference to families living in the surrounding community, making it more feasible for them to walk or bike to school.

Eighty percent of cleaning products are Green Seal certified. For pest management, Drew is serviced by contractor Waterhouse Exterminating, which uses monitoring boards to isolate problem areas, precision bait, and electrical flying insect devices instead of broad pesticide application. Waterhouse largely uses Mother Earth pesticides and organic pesticides whenever possible. Any liquid-based pesticides generally are applied to the exterior foundation, and always at times when students are not present, as required by state law. Drew's preventive maintenance practices help to mitigate mold and other air quality issues and mandate carbon dioxide monitors in both facilities.

Drew students have access to programs and classes throughout the year focused on health and wellness: the physical education offerings include tennis, golf, physical education, health, dance, and swimming. In addition, Drew uses Playworks to lead physical activities that build social and emotional skills during the daily recess for prekindergarteners through fifth graders. An affordable and well-attended after-school program offers its own set of physical activity opportunities, including martial arts, yoga, dance, capoeira, flag football, soccer, sports conditioning, and golf.

The Healthy You, Healthy Drew (HYHD) committee is comprised of faculty and staff from across the prekindergarten through 12th grade pipeline, the Drew PTA, and representatives from some of the East Lake partners, such as the East Lake Healthy Connections program and the East Lake Family YMCA. The HYHD committee is dedicated to bringing programs and opportunities to the entire Drew community, including students, faculty, staff, and parents. Events have included fresh fruit and veggie tastings, cooking demos, on-site farmers markets, meditation days, and staff wellness events.

Drew's Junior and Senior Academy was constructed in 2014 and acquired LEED Gold certification

Drew offers a full-time school nurse on each campus, at least two guidance counselors on each campus, and a full-time social worker for the student body. Other health-related offerings include visits from a mobile dental clinic, vision screenings, scoliosis screenings, community blood drives, asthma groups, and diabetes awareness.

Drew has implemented social-emotional learning programs on both campuses. At the lower campus, Second Step is used to create a positive, supportive environment, even with discipline issues, so that students are aware of choices they can make and goals they can set. Every Monday, the elementary students participate in a 10-minute meditation, the teachers lead periodic brain breaks, and the hallways are lined with "street names" like Leadership Lane and Respect Road. At the middle and high school, one of the school counselors is leading a peer counseling group as a course, the guidance counselors are trained in Choice Theory, and there are several clubs and advisory groups that focus on peer-to-peer support, such as No Place for Hate.

Drew works closely with community partners that support sustainable facility practices, wellness, and environmental education throughout the school community. The East Lake Family YMCA, East Lake Healthy Connections, United Healthcare, Publix, The Common Market, UNICEF, Captain Planet Foundation, Trees Atlanta, and the USGBC, help to make the education students receive at Drew relevant and meaningful.

Drew's instructional model seamlessly integrates STEAM topics into a project-based learning model. By teaching all subjects and standards through the lens of a real-world project, Drew incorporates community involvement, the facility and grounds, lessons on the use of finite resources, and local experts into instruction. Each of the two campuses offers unique and effective learning spaces that reflect the school's values around environmental responsibility and the health and wellness of students, staff, and school community.

At the Elementary Academy, every student at some point in their career will take an environmental education enrichment course. Additionally, the environmental

education teacher frequently partners with core classroom teachers to connect the concepts of sustainability and environmental awareness into the project-based learning projects the students complete each quarter. At the Junior and Senior Academy, students have the opportunity to take environmental science as a course for credit. Current or recurring topics across grade levels include: food scarcity, climate change, pollution, blood diamonds, animal conservation, food webs, changes in habitats, profit versus the environment, and water filtration.

Faculty members plan collaborative projects to teach state learning standards to Drew students using driving questions focused on health, wellness, and/or the environment. Some examples of such inquiry-based projects used are: How to Feed a Community in Need (incorporating gardening, farming, and resource allocation); Is Bling Worth It? (incorporating soil layers, mining, and persuasive writing); and What Does Plastic Make Possible? (incorporating wildlife conservation, cost analysis, and sculpture.)

Drew places an emphasis on connecting curriculum and projects to the real world and frequently brings in professionals to talk about career paths. As a project-based learning school, all projects include a community aspect, which involves students sharing their work and progress with community members and professionals in related fields. Examples of projects centered on sustainability in which students engage with community members are: a study in climate change and readiness, culminating in students collecting clothing items later donated to people sleeping outside in cold weather; a study in food scarcity, in which students cultivated and harvested crops later offered to community members at a steeply discounted price, making fresh whole foods available to school/community members; and fourth graders submitting their suggestions for animal habitat rehabilitation to Zoo Atlanta after studying best practices and humane options for enclosing large animals.

Both campuses house learning gardens that are used for instruction, tastings, and curricular support. The school is home to an NWF certified wildlife habitat. The Elementary Academy environmental education teacher hosts quarterly garden workdays for volunteer groups. They harvest, till, dig, build, and plant alongside students and families to prepare the gardens for the next growing season. The first-grade classes set up a farm stand to sell the produce they have grown, including fruits, veggies, herbs, and spices.

Godley Station K-8 School, Savannah, Ga.

Creating sustainable cultivators, producers, and engineers

Godley Station School (GSS) opened in 2010 in one of the fastest growing communities in the state. GSS is the largest school in the district, and serves 1,650 students from kindergarten to the eighth grade. The rapidly growing enrollment at the school has increased .055 percent, or between 90-100 students, every year over the past five years. GSS received the Savannah Chatham County Public School System (SCCPSS) sustainable schools award for the 2017 school year. GSS strives to reduce environmental impact and costs, improve health and wellness, and facilitate effective environmental and sustainability education for students and the community. Specifically, Godley Station has made a commitment to sustainability in five areas: resource conservation, greenhouse gas emissions, transportation, health and wellness, and education for sustainability.

The school has worked to improve its use of renewable energy while reducing its energy costs. In 2018, GSS earned the ENERGY STAR award with a Portfolio Manager score of 89, and earned the ENERGY STAR certification, reducing greenhouse gas emissions by 38 percent. When GSS opened in 2010, the 167,142-square foot building was designed to educate 1,100 students. In the eight years since the GSS's opening day, the school has had to expand to 182,757 square feet to accommodate the student body.

Godley Station currently recycles 33 tons of waste each month. During the 2016-17 school year, it piloted a composting program with sixth grade students. The school cafeteria switched from Styrofoam trays and bowls to paper trays, which are made of 80 percent paperboard and 20 percent recycled pulp. In 2015, two drinking fountains were replaced with water bottle filling stations to supply purified drinking water and reduce the use of disposable plastic water bottles.

Godley Station has instituted a variety of energy saving practices, such that the utility cost per square foot of the school is one of the lowest in the district, at $.74. The district has incorporated energy management performance guidelines during occupied hours for temperature and mechanical equipment operation that have reduced energy consumption. The building's automation control system schedules equipment to operate from 7 a.m. to 4 p.m., Monday through Friday. The interior space temperature settings are programmed to 74 degrees during cooling season, and 68 degrees during the heating season. In addition, GSS has replaced exit signs and emergency lighting with energy-efficient LED signs, and added lighting and occupancy sensors throughout the building for long-term energy savings.

The Godley Station nutrition department participates in a farm to school program in order to offer local, fresh food

The SCCPSS district also strives to reduce environmental impact by incorporating bus idling guidelines. Bus engines are off and parking brakes engaged while loading and unloading students. Bus routes also are designed to be most economical while providing safe and timely service for the students. Transportation uses the TransFinder software program to develop efficient, direct and timely routes for all eligible students. All buses are equipped with GPS receivers, enabling each route to be timed and immediately located when there is a need to investigate or verify. Rider censuses are performed periodically, and routes are combined/shortened or rerouted where possible to improve efficiency. Transportation directors audit the routes by doing ride-alongs that have proven to be very beneficial. This program, implemented in 2016, reduced school bus routes from 18 to 15 during the first year.

Godley Station's nutrition department participates in a farm to school program in order to offer local, fresh food. Students tend to the school garden and use the harvest to make food in health and nutrition classes and in the cafeteria. The GSS garden club has grown from five participants in 2012 to over 60 in the 2017-18 school year, meeting after school and on occasional Saturdays. The garden club has collaborated with the engineering and robotics club to build a greenhouse, incorporate a solar panel, and to design an in-ground watering system.

The school also has active athletic and nursing departments. Students are able to participate in softball, baseball, soccer, volleyball, basketball, and football. The school also hosts Sweet Feet Soccer, Girls on the Run, Girls on Track, the Good News club, chartered a Boy Scout Troup, and sponsored a Girl Scout Troop. The school nursing program offers daily care to the over 1800 students and staff. In addition to this care, the nursing staff has advocated for and was awarded grants for automated external defibrillator (AED) devices and training, yearly cardiopulmonary resuscitation (CPR) training, and stop-the-bleed training for staff.

Godley Station has adopted an IPM program to reduce pesticide use. When pesticides are applied around campus, treatments are scheduled on weekends and staff and students are prohibited from entering the area for at least eight hours. The pest control contractor uses glue boards and trap boards whenever possible in order to protect students and staff from harmful chemicals. The SCCPSS prohibits smoking in schools and around school campuses. Seventy-five percent of the district's custodial staff uses 75 percent cleaning products that are certified through Green Seal. In addition, five rooftop energy recovery units take in outside air, which is filtered, dehumidified, heated, and delivered to each classroom space and common area through the interior HVAC system. This system helps control building humidity and deters mold growth. Air filters are replaced quarterly, cooling coils are cleaned on all HVAC equipment, facilities are inspected for moisture and mold, and building occupants experience a dry, comfortable environment. Every classroom has windows to allow natural light to improve the overall atmosphere and increase students' productivity.

Godley Station facilitates environmental and sustainability education for students and the community. Students not only meet the environmental standards for each grade level, but participate in after school clubs that promote a deeper understanding of sustainability concepts. The garden club created and taught "in-house" field trips to the kindergarten through second grade population. As students progress in their knowledge, they are able to learn and experiment with hydroponics and aquaponics. Older students are involved in composting and recycling groups to promote the education of effective stewardship of their natural resources. This includes field trips to the Oatland Island Wildlife Center to study animal habitats and the marsh ecology system. All of these programs, combined, prepare GSS students to be sustainable cultivators, producers, and engineers.

Saddle Ridge Elementary Middle School, Rock Spring, Ga.

A new school growing out of its doors in agricultural education

Saddle Ridge Elementary Middle School (SREM) is a LEED Silver certified prekindergarten through eighth grade public school serving 588 students, 62 percent of whom are eligible for free and reduced price lunch. SREM has reduced greenhouse gas emissions and maintained energy consumption below its baseline every year. The district purchases 50 percent of its energy through renewable sources through North Georgia Electric. Each classroom is equipped with energy saving motion-sensor light switches; HVAC systems are on an automated centralized control system; and water heaters are controlled digitally to conserve energy. The new facility is also equipped with a drainage system and cool roof.

Saddle Ridge students unload mulch, donated by North Georgia Electric, for the garden

Saddle Ridge opened in the fall of 2013 as the first paperless school participant in the iSchools Initiative. Food waste from the cafeteria fuels worms and compost. Students are encouraged to take home fresh fruit that other students do not eat during lunch. SREM was designed for project-based learning, which includes large common areas for collaborative learning. $1.4 million was spent to build SREM's wireless infrastructure, though the district paid only a fraction of that because of a federal program funding infrastructure in schools and libraries known as the “E-Rate.”

The campus is 93 acres, and features an NWF certified wildlife habitat; gardens including pollinator, food, sensory, sundial, aquaponic, hydroponic, and greenhouse; wetlands; a trail system; pond; and woods. A grant for an outdoor agricultural learning facility requested through state appropriations committee is currently in the budget for the 2018-2019 school year. The areas of study the new facility, available to the public as well, is expected to be well equipped to address include: wetlands, water quality, trails, pond, stormwater areas, forestry, wildlife, habitats, and natural resources.

The school implements a green cleaning program using Safer Choice, Ecologo, and Bright Solutions products. SREM controls pests in the garden with organic methods, such as companion planting. Teachers and staff are trained to use positive

language and interactions with students. All discipline is focused on a counseling/coaching approach rather than a punitive approach.

Active since the school's inception, SREM's faculty wellness committee sponsors activities ranging from Crossfit classes to FitBit challenges. Staff members are also engaged in a State Health BeWell coaching incentive program through Blue Cross Blue Shield. Health and wellness transcend every classroom and every grade level with a Power Up for 30 state program, through which students are engaged in movement at least every thirty minutes. Students at all grade levels are involved in education about health, and participate in Jump Rope for Heart, FITNESSGRAM, Five for Life Program, First Down for Fitness, and Fuel Up to Play 60. Many students receive weekend food backpacks.

Saddle Ridge has been named a model for agricultural education at the primary level, with state education personnel drawing on advice from the county as they implement statewide legislation for elementary agricultural education. SREM is engaged in educating students and the community about the importance of agriculture, farm to fork, and stewardship. Walker County Farm Bureau partners with SREM agricultural educators to bring weekly activities to elementary students. Students gain workplace readiness by producing sustainable crops, running an agribusiness in the greenhouse, and marketing their products to consumers.

The school garden grows larger every year, reducing the area needing to be mowed and increasing areas for students to learn about horticulture, nutrition, and agriculture. Every grade level has their hands in the garden. By germinating, sprouting, transplanting, watering, caring, and tending to their garden, students provide produce for the SREM kitchen and plants to sell for fundraisers. Students cultivate produce, sell it to a local pizza shop, and donate the proceeds to the local Care Mission.

Saddle Ridge is the second public school in Georgia to offer outdoor kindergarten. Second grade students hatch baby chicks. Sixth grade participates in a year-long study on erosion, water systems, and trail development in the campus' woods. Seventh grade participates in habitat construction, biology, and year-long dissection labs. Eighth grade students study physics, chemistry, and run the school wide recycling program. A 4-H agent works with grades six through eight during class time. Students study soil conservation, habitats, water quality, and wildlife management, among other topics. They dissect frogs, whole pigs, cows' eyes, crawdads, and cats in seventh grade biology.

Saddle Ridge participated in a yearlong professional development program that has increased teachers' ability to plan, incorporate, and implement project-based

learning activities which focus on student engagement as aligned to curriculum and instruction.

Lanier High School, Sugar Highway, Ga.

Environmental and health pathways pave the way for sustainable careers

Lanier High School believes it is important to have students become leaders within the school and in the broader community. As a Gwinnett County Public Schools academy school, Lanier students are immersed in project-based learning by engaging in real-world STEM activities. Community experts in various STEM fields speak to Lanier students and offer real-world connections to what they are learning, as well as provide inspiration for pursuing environmental career pathways.

Lanier is ENERGY STAR certified with a score of 99, and upgrades include occupancy sensors and lighting retrofits in all classrooms. The environmental club places light and projector "turn off" reminders in all classrooms and office spaces. Computers and copiers are set to ENERGY STAR sleep mode. The media specialist designates specific days and times that the laminator can be used, and all staff follow the district's "unplug and put away" protocol prior to leaving for extended breaks. Personal lamps, refrigerators, and microwaves are not permitted in individual classrooms.

Lanier irrigates its athletic fields with reclaimed stormwater and well water. All landscaping is regionally appropriate and does not require irrigation. A group of students visits Johns Creek Environmental Campus Wastewater Treatment Plant annually to learn what is involved in maintaining healthy drinking water. They have the opportunity to engage in an internship during which they can shadow actual plant operators. Students are involved in hands-on chemical and biological monitoring of a local stream. Lanier partners with Elachee Nature Center, which sends naturalists to teach about stream ecosystem while catching macro-invertebrates and determining the overall health of the stream.

In one effort to reuse waste, Lanier has developed a community partnership the WES foundation (leukemia research), in which Lanier students repurpose water bottles into floral works of art. The flowers then are delivered to cancer patients in local hospitals. Students also participate in an educational campaign called "Refill not Landfill" whereby they teach their peers how to reduce waste by using reusable water bottles.

Lanier High School has partnered with Charity Recycling Services, a textile recycling company, to help reduce the amount of textiles being landfilled in the U.S. The school earns money based on the volume of textiles collected, and allows clothing to be repurposed.

Lanier was recognized by the Georgia Department of Transportation's Commute Options Program for being the first school in Gwinnett County to have six designated parking spaces for carpooling teachers and students. Since 2010, Lanier has partnered with The Clean Air Campaign to implement a no-idling campaign and a Ride the Bus campaign, designed to reduce idling and air pollutants. Lanier students conduct ozone testing and air particulate testing, and learn how to use living algal/fungus (lichens) to determine air quality. They then compare their findings to the ozone and particulate readings published by the county.

Daily detailing and vacuuming of the facility by custodians removes potential allergens, such as paper dust, and other particulates that might be generated from daily activities, along with mold spores and pet dander that can be brought into the building by occupants each day. The IPM program actively addresses any emerging roach or vermin infestations. Humidity is controlled by HVAC systems, and is kept below the 65 percent level necessary for dust mites to thrive, controlling another allergy-causing pest.

Lanier students at Elachee Nature Center during a stream ecology lesson

Lanier is committed to improving the health and wellness of students and staff. In addition to participating in a farm to school program, cafeteria staff members take part in a nutrition education program. Through the program, they visit classrooms to teach students about proper nutrition and provide taste tests for locally grown foods. Lanier adheres to the Smart Snack guidelines for lunch menus and vending machines. The school nurse reviews menus for carbohydrate counts, which is especially helpful for students with diabetes.

In physical education, students participate in FitnessGram assessments that test aerobic capacity, muscular strength and endurance, flexibility, and body composition. Scores determine overall physical fitness levels and suggest improvements when appropriate. Life and Health Science Academy students collaborate with the city of Sugar Hill to host a health and wellness fair annually.

Classroom instruction and labs conducted address many environmental and sustainability concepts, such as waste reduction and recycling, urban agriculture, nutrition and food equity, energy conservation, air quality and pollution, water quality, pollution and conservation, endangered species, biodiversity, and habitat conservation. During earth week, students sign environmental pledges and host a "global tea party," representing different parts of the world. They educate each other on global careers as well as global environmental impact. Items are brought in for students to experience foods from around the globe.

Lanier's environmental stewardship extends beyond school walls into the garden. With grant funding, the school installed a fully functioning outdoor living classroom, including garden beds, a butterfly garden, a compost bin, two rain barrels, picnic tables, birdhouses, birdfeeders, and a bat house, with future plans for a greenhouse.

Two Lanier students were selected to participate in Gwinnett Clean & Beautiful's Green Youth Advisory Council. These students work with other high school students from throughout the district, a 2013 U.S Department of Education Green Ribbon School District Sustainability Awardee, to help lead environmental service projects within Gwinnett County. One of the Council's many outreach projects was to collect over 700 books to donate to local children in need.

Georgia Southern University, Statesboro, Ga.

Leading the community as a high performance healthy school

Every year the Georgia Southern University president hosts a tree planting ceremony on Sweetheart Circle, a tradition dating back to the 1970s, instead of mailing Christmas cards to the campus community to kick off the holiday season.

Georgia Southern is the state's largest and most comprehensive center of higher education south of Atlanta. As of fall 2017, Georgia Southern has an enrollment of 19,085 students, and operates 5,658,871 square feet of facilities on 900 acres.

In December of 2007, Georgia Southern's president, Bruce Grube, signed the American College and University Presidents' Climate Commitment (ACUPCC). In 2011, President Brooks Keel re-signed the ACUPCC agreement, demonstrating a firm belief in the power of higher education in shaping a sustainable society. By becoming a signatory of the ACUPCC, the University has re-committed to its efforts to meet the goals and objectives of the ACUPCC, while continuing to focus on becoming a regional leader in sustainability and renewable energy.

Since then, the university has made the principles of sustainability fundamental to every aspect of the higher education the school provides. The entire campus is committed both to preparing students to develop the solutions for a healthy and sustainable society and making sustainability a core value in operations and planning.

Georgia Southern formed a sustainability committee from a group of diverse representatives, including administrators, faculty, staff, and students, to develop a Climate Action Plan (CAP). Key committee members responsible for the CAP included the provost, vice presidents, deans, directors, architects, designers, environmental engineer, the sustainability coordinator and the energy manager. Moving forward, all campus capital improvement, maintenance, and operational initiatives will be considered against the commitments of the Georgia Southern CAP.

The university was named one of the top green universities for the sixth consecutive year by the Princeton Review. Georgia Southern also was given awards of excellence for work in creating a pedestrian-friendly campus to reduce carbon footprint and encourage healthy habits.

A functioning boat built out of recycled bottles by Georgia Southern students

Georgia Southern has been one of the state's top participants in the Georgia Power Company's commercial energy efficiency rebate program. Through this program, the school has offset approximately eight million kilowatt-hours of energy. Georgia Southern has set up an energy management system to monitor real-time energy usage, and is able to control and alter that energy usage from the main facilities office. Students have set-up a wind turbine that can power personal devices in the Math and Physics building. Another student-led program tracks solar energy and provides valued data on thermal radiation in Statesboro. This information provides the background data that is needed to optimize solar energy projects. Buildings have energy recovery systems that condition the air returning into the building. Georgia Southern has 14 buildings with white roofs made of 97 percent reflective foam, which significantly increases the insulation value of the building, in addition to keeping buildings cooler by reflecting sunlight. Georgia Southern University has imposed requirements of its own above the state minimum green

building requirements. Efforts to build high performance buildings have earned the school eight green building certifications. From 2014 to 2016, the school was recognized by the USGBC Georgia as a Georgia High Performance Healthy School, an award that acknowledges the school's commitment to creating healthy and efficient learning environments.

Georgia Southern was one of the first universities in Georgia to irrigate with grey water, and is known statewide for its water conservation measures. The school has quantified on-site carbon offsets with the USDA's software program i-Tree. Georgia Southern is ranked first nationally for the number of passengers on its buses per mile (1200+), and has over 15,000 passengers per day. This reduces the number of single passenger vehicles on campus and overall carbon footprint. The school has installed free community electric vehicle charging stations that connect the electric vehicle charge locations between Atlanta and Savannah.

Georgia Southern has raised the community sustainability consciousness. As a state university, it is Georgia Southern's goal to continue to support federal, state, and local efforts toward climate neutrality. Engineering professors have received some $524,000 dollars from the National Science Foundation. The grant will enable them to bring cutting-edge renewable energy research into the high school and technical school classrooms in the high-need rural areas of Georgia.

Dining facilities operate pulpers that reduce the volume of food waste by nearly 90 percent. In addition, a portion of this pulp was used in a student-led research composting program. Dining facilities save used cooking oil and fryer grease for conversion into biodiesel and a variety of other products by a third-party vendor. Georgia Southern has eliminated food trays in dining halls, helping to reduce food waste by 25 to 30 percent per person, and conserves energy and water used for washing them.

The school's wellness program is dedicated to enhancing staff, faculty, and student wellness. Georgia Southern provides a full range of health care services including medical, counseling, education, and wellness, and has received recognition by the Accreditation Association for Ambulatory Health Care, Inc. as a Patient Centered Medical Home, the highest achievement for primary care. It is a mark of excellence honoring the fact that Georgia Southern University Health Services adopts best practices and complies with nationally recognized standards of care.

Campus Recreation and Intermural provides programs that students, faculty, and staff can participate in to boost healthy balanced lifestyles, including alternative transportation options, along with special awareness events such as Wellness Week; Stomp Out Stigma week, which is dedicated to decreasing stigma towards mental illness on campus; and Think Before You Drink Week. The University

Wellness program is committed to helping students achieve balance in each dimension of wellness.

Georgia Southern's sustainability efforts to date have included a focus on awareness and educational curriculum enhancements. The school continues to create and build programs that will inform the campus about environmental sustainability and climate awareness. The Center for Sustainability has partnered with Residence Life to run a recycling hall incentive program. Students obtain a recycling card from their hall's main office. When a student recycles, their card is stamped, and when the card is full they are eligible to win a prize. The campus features a free community electric vehicle charger, a cross-campus natural corridor consisting of preserved woodlands and wetlands, dedicated bike lanes, and a farmer's market that supports the local economy while providing students with fresh produce, baked goods, honey, soaps, and crafts.

Students are deeply engaged in the local community and have a strong sense of civic responsibility. All Georgia Southern students are required to take a 1000-level environmental science course prior to graduation that emphasizes interdisciplinary learning to solve sustainability problems. For students who want more, Georgia Southern offers an interdisciplinary concentration in Environmental Sustainability for undergraduates of any major. Courses often require service learning experiences through which students serve their community while learning course content. Georgia Southern has hosted a Farm to Table Workshop for other universities in the state through the Georgia Campus Sustainability Network, and regularly provides student service learning opportunities with local growers.

The Student Government Association (SGA) proposed a sustainability fee of $10 that was passed by a 75 percent majority of the student body. This fee supports the Center for Sustainability, and other sustainability initiatives on campus. The Center for Sustainability hosts annual GreenFest for the local community, as well as a Sustainability Seminar Series, including speakers such as former U.S. Secretary of Energy and Nobel laureate Steven Chu, Robert Kenner of Food Inc., environmental justice activist Majora Carter.

The Green Fee also supports student programs such as an afterschool garden program in local schools, campus community gardens, food waste composting, RecycleMainia, residence hall recycling incentive program, and No-Impact Week activities. The week includes No Trash Day, Bike to Campus Day, Energy Day, and the Dress in the Press Competition, during which student designers showcase their creativity by constructing a dress out of recycled materials, predominately newspaper and magazines from Student Media. In addition, the campus participates in Walk a Mile in Her Shoes, an international program that aims to raise awareness and encourage communication about gender relations and sexual

violence. Men throughout the campus and local community walk in red high-heeled shoes to draw attention to the issue. All proceeds are donated to the Statesboro Regional Sexual Assault Center.

A grant program has been implemented that provides funding to campus sustainability initiatives. To reward students, faculty and staff that enhance the universities' environmental program, a Green Eagle Award was created. This award is presented at an annual sustainability showcase along with displays from grant awardees.

Hawaii

Honowai Elementary School, Waipahu, Hawaii

Transforming budgetary drain into financial asset

Always seeking opportunities for advancement of the community as a whole, Honowai Elementary is at the heart of Waipahu, Hawaii's success. Honowai Elementary was established in 1968 to serve the community consisting of single family and low-income housing. Sixty-six percent of students qualify for free or reduced priced lunch. Waipahu is the Hawaiian word for "gushing spring," and was considered the capital of Oahu to Native Hawaiians because of the congregation of people to the natural spring that provided restoration and relaxation.

The Hawai'i Department of Education has made a commitment to reducing environmental impact and costs, working with a multidimensional program for energy efficiency, clean energy, and energy education, called Ka Hei. The Ka Hei program has been instrumental in the modernization of Honowai Elementary, which was selected as a pilot site. Efficiency measures include interior and exterior LED retrofits, refrigeration system and electric motor upgrades, ventilation controls, roofing insulation, and retro-commissioning of existing HVAC equipment. Honowai has earned an ENERGY STAR Portfolio Manager score of 96, reducing greenhouse gas emissions by 58 percent and energy use by 42 percent in just one year.

Classroom temperatures were high enough to warrant specific heat abatement efforts. Through the Ka Hei program's efficiency module, as well as with behavioral modifications, the use of energy was reduced significantly, which allowed for the additional load of air conditioning and ceiling fans installed in each classroom. Honowai Elementary has 492 solar photovoltaic modules that generate 400 kilowatt-hours per day of clean power, minimizing the campus' carbon footprint. The data that is collected on the array provides real-world data through a web application

called UtilityVision for students to learn about renewable energy. Efficiency and conservation behaviors are addressed through the R.E.A.C.H. (Reducing Energy And Changing Habits) program. Over 75 percent of students walk to school regularly.

With these thermal improvements, air conditioning also reduced the chance of mold growth and kept out pollens and other outdoor irritants. Food safety in the walk-in refrigerators has increased with real-time digital temperature data logging. Occupants also have noticed better ventilation in the library. The classrooms and buildings that hold the solar array all have new roofs, reducing the chance for roof leaks and heat in the buildings thanks to added insulation.

Connecting students to the origin of the land they live, the importance of oral history is stressed and native Hawaiian storytellers are brought in to support students in creating relationship with their history. Culturally responsible education in geographically diverse areas, such as Hawaii, is essential to the health of the community and ecology of the relationships that thrive within a school setting. Teachers received professional development and resources to aid in connecting the physical changes of the facility to hands-on, inquiry based learning for students.

Honowai Elementary teachers learning about the multi-step process to harness energy through the Ka Hei program

Honowai coordinates quarterly tournaments for the entire Waipahu community. Students are provided with a structured recess with team sports and grade-level activities. There are adaptive physical education classes for those requiring special care. Annually, Honowai Elementary alternates between a May Day celebration and a Field Day. These festivals are open to parents and guardians of Honowai students to join in on the activities, including relay races, target games, and Zumba.

As part of the school's "Gotcha" program, students are awarded slips for unsolicited good/positive behaviors around campus. Teachers can only administer Gotcha slips to students who are not in their classroom, as well as to entire classes if deserved. This has been a positive behavior support that encourages students to act in a more

constructive and helpful way. Students are acknowledged for their positive behaviors through the media club that provides announcements daily.

The Parent Community Network organizes and supports programs for parents and guardians in the community of Honowai Elementary. Recently, the network partnered with the Honolulu Police Department to offer strategy sessions aimed at assisting parents with trying children. Parents and guardians walked away with a wealth of knowledge and a binder on strategies to support their children through elementary, intermediate, and high school. Honowai Elementary offered teachers to assist with childcare services for the parents who were attending the sessions.

One of Honowai's health-related efforts has been to reduce the incidence of head lice ("ukus" in Hawaiian). Honowai Elementary uses a "no-nit policy," which is a school-led initiative to help reduce the spread of ukus. Through strong efforts, the program has created a supportive community that understands the importance of a healthy school site. Honowai Elementary uses a once-per-quarter screening for students, as well as on an as-needed basis to keep the school uku-free. Honowai also participates in vision and hearing screenings and offers vaccinations.

The loʻi (taro) patch on campus provides a traditional, pre-Captain Cook, sustainable source of food. The lessons that are provided alongside the loʻi tap into the outcomes that are firmly rooted in Hawaiʻi as part of a state department-wide framework to develop the skills, behaviors and dispositions that are reminiscent of Hawaiʻi's unique context, and to honor the qualities and values of the indigenous language and culture of Hawaiʻi. The six outcomes that are taught are the universal values within each culture, bringing a sense of value and strength to each person that engages in the learning experience. Students and educators who engage with the lo'i patch have the opportunity, once ready for harvest, to pound the stem of the taro plant into a traditional Hawaiian food, poi. There are also hydroponics and aquaponics systems on campus.

Today's Waipahu schools carry the load of providing an education to students that will enable them to be college, career, and citizenship ready. At Honowai Elementary, students are provided with education that highlights place-based learning, solar energy, computer science, the Kapakahi stream, and oral history. Students step into the role of an individual in a STEM career and carry out a performance task that correlates to the Hawaii Content and Performance Standards as well as the newer NGSS. For example, in the role of an energy management consultant, students recreate the work of an individual who they saw on campus conducting data collection from the Ka Hei program.

Honowai Elementary engages students in collective actions that identify issues of public concern. Students from the gifted and talented program set out to create a

safe pedestrian area around Honowai Elementary. The students in this track were able to identify and assess the issue of speeding. Responding to the needs of students who walk to school, the group of students was able to create a solution that was accepted by both the neighborhood board and city hall.

Illinois

Monroe Elementary School, Hinsdale, Ill.

Educating the caretakers of our earth

Monroe School is dedicated to preparing students to understand their role in the world and their responsibility in protecting it by reducing environmental impact, improving health and wellness, and internalizing environmental literacy.

Monroe has a decades-long commitment to environmental education through its "Living Classroom Learning Lab," now in its 23rd year. Right in their own schoolyard, Monroe has created a prairie, butterfly garden, Japanese garden, vegetable garden, pond, and bee habitat. Teachers, working with parent volunteers, help the students as they plant, weed, harvest, make observations, and write in the gardens. It is truly "hands-on" learning across the curriculum.

Living Classroom lessons focus on the interdependence between humans and nature and humans' responsibility to be good stewards of the environment. In 2017, Monroe added an observation bee-hive to further stimulate student investigation and support students' sense of curiosity. This year, through their study of pollination, the first grade class will be designing, acquiring funds for, and planting a hummingbird garden. All of these approaches contribute to the sustainability of local ecosystems.

The Living Classroom curriculum from kindergarten through third grade teaches the importance of the life cycle of every ecosystem by developing the concepts of producers, consumers, and decomposers. The students come to know that humans and animals have the same requirements to sustain life, and that both groups have nutritional needs that begin with plants. In the spring, kindergarten students plant the seeds of vegetables, and first grade students plant the seeds of flowers. Throughout the summer, students watch their plants grow into delicious vegetables and beautiful flowers. As some of the vegetables and flowers wither in the late fall, these same students will harvest the seeds of their plants, saving them to be planted in the spring. By experiencing the complete circle of life of an ecosystem, the students come to realize the necessity of caring for and sustaining each ecosystem. Fourth and fifth graders delve deeper into the study of ecosystems by observing and

researching the microscopic creatures that inhabit a pond. By developing the food chains and food webs contained in the pond, they understand the necessity of maintaining the need for biodiversity, which is a vital part of the well-being of the planet.

Monroe's Living Classroom extends beyond the school and into the greater community. The school has a special partnership with a neighbor, who helps with the upkeep of gardens and has provided tree donations. During the summer, many families take turns weeding and watering the grounds. Students educate neighbors and parents with literature about the need for biodiversity and the importance of pollinators to the environment and human health. At the end of summer, a vegetable, honey, and lemonade stand brings families and students back together to celebrate the harvest and connect before the start of the school year. In October, the vegetables planted by the kindergarteners and harvested by the first graders are donated to the local food pantry. Monroe continues this spirit of helping others by sharing compost with Chicago Public School gardens.

In addition, the school promotes health and wellness. Monroe kicks off the school year with a family five-kilometer run/walk in a nearby forest preserve. The administration encourages alternatives to driving to school via walk-to-school challenges and a bike-to-school safety course. A morning running club called Monroe Milers supports over 200 students exercising before school. Students also participate in Jump Rope for Heart, a school operated Lift-a-Ton club, after-school yoga, and teacher-led movement breaks during class. Monroe 's Illinois Blue Ribbon award-winning physical education department encourages outdoor fitness by holding approximately 50 percent of daily classes outside, including an annual sledding day. An all school field day culminates the yearlong emphasis on health and wellness. A generous outdoor recess policy allows students a fresh-air opportunity anytime the temperature is over zero degrees. Finally, field trips often are planned to promote the outdoors. Fifth graders attend a three-day, two-night field trip at an outdoor educational camp to learn more about nature and unique environments, while kindergartners tap maple trees, and third graders learn about habitats at the Morton Arboretum.

Monroe Elementary's principal and bee mentor inspect the school's observation hive

To help reduce environmental impact, Monroe has a student green club that meets twice a month. They learn about recycling, upcycling, sustainability, and implement schoolwide programs. These include classroom green captains, a lunch-waste audit, and promoting zero-waste lunches. Batteries, holiday lights, and fluorescent lights are collected for proper recycling. Students help educate parents by making signs to not idle during pickup and dropoff. The green club ran a campaign to obtain a new tree for the school playground, during which all students voted on which type of oak tree to plant. Parent volunteers give environmental talks during the lunch hour. Monroe hosts an Earth Day upcycling collection, during which the school asks the community to bring in unused household goods and clothing for resale, keeping these items out of landfills. The monthly hot lunch program was modified to produce less waste in its packaging. Monroe has a green, paperless PTA, with online communications and registrations. Green yearbook practices earn the reward of having more trees being planted in the school's name. The school has water stations throughout the school for students to fill their own reusable water bottles, and has staff training on environmental issues. As a result of these efforts, Monroe is proud to have been awarded the Earth Flag and Water Flag from SCARCE, an environmental education nonprofit.

Monroe works to educate the community, and embody what it means to be green.

Southside Occupational Academy High School, Chicago, Ill.

Daily affirmations of environmentalism for special needs students on Chicago's south side

Southside Occupational Academy is a vocational school of 270 special needs students between the ages of 16-22 in Chicago's West Englewood community on the south side. The school motto is: "We believe in ourselves. We learn in different ways. We understand we are important. We excel in school, work and in the community." It is through this anthem, which the school community repeats daily, that students are inspired and encouraged to live and breathe a better life. With these goals in mind, Southside is creating a closed-loop system to support students and the community. Politico recently published an article featuring Southside's programs and ethos, highlighting the collaborations the school has formed with Chicago-based institutions as well as the work the school is doing in West Englewood. Southside is changing the way they think about and practice special education by expanding the network of possibilities that those with special needs can pursue and creating a space and community, within itself, to allow students to model lifestyles and behaviors that lead to healthier lives and help contribute to a healthy environment.

In recent years, Southside has been able to reduce environmental impact and cost. As an institution focused on increasing student independence, many courses have teamed together not only to contribute to the maintenance of the school's landscaping, but also to use the space for instructional purposes. Horticulture class uses the outside space for gardening various ornamental plants as well as fruits and vegetables. The custodial course uses "green" cleaning materials, and contains a unit focused on landscaping, where native plants are used to create rain gardens to help reduce wasteful runoff. The lawn is kept and maintained by students, who rake the clippings for mulching the school orchard or adding to the growing vermicomposting program. The agriculture course also helps in beautifying the campus by planting trees, perennial bulbs and grasses, and native pollinator habitats. Also, by collaborating with the carpentry lab, students have constructed honey bee hives that have been used on campus, in addition to setting up a poultry coop that houses a combined 50 chicken and ducks, and produces over a dozen eggs a day. These eggs are then used by the culinary lab, or sold to faculty and staff to fund additional programs. Additionally, physical education classes also use green space when practicing for various Special Olympics sports. While making use of green space, students also learn about how to minimize their carbon footprint. For this reason, Southside has a built-in travel training program. Public transportation is the best way for students to get from place to place while also helping the environment.

A Southside student inspects the plant she has raised from a seedling

The health and wellness of students and staff is at the forefront of Southside's focus. In 2017, Southside began implementing a classroom technique called Calm Classroom. Three times a day, teachers read or play a meditative video or script for students. This practice teaches both students and staff the importance of mindfulness. Teachers' days are often filled with never-ending to-do lists and stress. Many of students also face various forms of stress and anxiety. Calm Classroom provides the room with three to five minutes of meditation three times a day. Students have had a very positive reaction to this, often using the practice as a coping mechanism or preferred reinforcer. The values of health and wellness also are stressed throughout course such as culinary arts, health, and physical education. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Systematic activities to prevent or cure health problems and promote good health in humans are delivered by health care providers. In addition to health care

interventions, a person's surroundings, and a number of other factors are known to influence the health status of individuals, including their background, lifestyle, and economic and social conditions; these are "determinants of health." This course is designed to help students develop the ability to achieve socially responsible behavior. Students are encouraged to become productive and independent family members, citizens, employees, and participants in a variety of vocational and leisure activities. Physical education involves competency in a wide range of motor, nonmotor and manipulative skills. Learning in this area is developmental, building simple movements into more complex patterns. This course is also designed to provide year-round sports training and athletic competition in a variety of Olympic-type sports to prepare students to participate in Special Olympics. This two-fold approach to health helps students to develop a clear and habitual practice of both physical and mental health.

The importance of respecting the environment is incorporated into every class at Southside as students are asked to self-assess how they did in terms of “Respecting themselves, respecting others, and respecting the environment.” This fortification of environmental literacy incorporated throughout the curriculum has established a culture of young environmental stewards, as well as kind and compassionate young adults.

Wolcott School, Chicago, Ill.

A healthy-building-fueled wellness environment for students

Wolcott School is a leader among Illinois private independent schools pursuing sustainability. The school building, located in Ukrainian Village, was completely rehabbed five years ago. It took three years and a $13.3 million fundraising campaign to update the facility, which originally was built in 1926. In 2013, Wolcott received a LEED Gold Certification for its 90-year-old facility, working closely with a general contractor. Since opening in 2014, the school has showed improvements in energy use reduction, water efficiency, sustainable purchasing, waste management, green cleaning, indoor air quality, and innovative operations. The award-winning architectural design, and recently added community garden and solar panels create the perfect learning environment for this community of young adults committed to sustainability, wellness, and hands-on curriculum.

Wolcott continues to work to improve energy efficiency. The building has solar panels on the roof that supplement power for the whole facility. The school's lighting is LED-based with motion detectors in all classrooms, which monitor activity and turn off lights when not in use. The certification process allowed the school and staff to

make huge strides in sustainability, awareness of energy savings, recycling, cleaning, and classroom instruction. Water usage in the building meets LEED standards with low-flow toilets, use of rain barrels for gardening, and efficient water fountains. Wolcott has a compost bin that can be transported from the cafeteria to outside. Wolcott keeps a record of water and energy usage throughout the year to monitor and continually develop innovative ways to reduce usage and improve efficiency.

Wolcott School was awarded a $7,000 grant by the Illinois Clean Energy Community Foundation Grant (ICECF) in 2016. The Independent Foundation was established in December of 1999 with a $225 million endowment provided by Commonwealth Edison. Their mission is to improve energy efficiency, advance the development and use of renewable energy resources, and protect natural areas and wildlife habitats in communities all across Illinois. Wolcott's ICECF grant extended and expanded STEM education for students with learning differences. Wolcott students study the effect of the solar panels in the physics curriculum.

Wolcott students work in the student-founded school garden

Air filters are an integral part of Wolcott's HVAC system in order to provide clean and healthy air. The HVAC environmental company that manages Wolcott's HVAC system does quarterly checkups to ensure that all Wolcott's equipment is running efficiently and that air filters are fully functional. Wolcott's facilities director and his team are constantly inspecting the building for areas where there is moisture. Wolcott uses humidity monitors and dehumidifiers to ensure moisture levels are being managed properly. To help to prevent pests, Wolcott only allows food in the multipurpose room.

Wolcott has chosen to include plants in the landscape. The plants include alpine bushes, ivy, and assorted annuals. All plants and flowers are located on the west side of the building in and around the courtyard. Wolcott developed an approved list of cleaning supplies and other products that it determined were environmentally

preferable. All of the purchasing is centralized and goes through the business manager, so he can ensure that Wolcott adheres to the approved list.

The school uses water bottle usage stations to reduce plastic water bottle use. The school provides shuttle bus transportation to and from the major Metra stations so student and staff commuters can conserve fuel. The school curriculum includes instruction and learning opportunities that promote environmental literacy. Students participate annually in Green Apple Day of Service.

The science department works to design curriculum and instruction that addresses sustainability in the Environmental Science class. For example, students in the class work through a unit on sustainability and human values that includes an analysis of the United Nations Sustainable Development Goals, as well as a reflective essay on students' individual environmental ethics and view on sustainability. Additionally, during the fall of 2017, the science department coordinated a "Solarbration" Day in conjunction with the Green Apple Day of Service. On this day, all students met with Wolcott's architect and learned more about Wolcott's LEED certification, and also learned more about the solar panels that were installed in 2015-2016.

Students are exposed to green technologies in the context of science courses, engineering courses, environmental science, and in gardening club. As a college prep high school, students develop the skills required for engineering, business, communications, and related fields that have potential to promote success in students with learning challenges. For example, students went on a field trip to Method, a soap company with a local plant that is considered one of the most sustainable green product facilities out there. Method's mission is to be kind to the planet.

Wolcott's health curriculum teaches important topics for life outside of school. Students learn a great deal of information that will apply to their college experience as well as after college. In Wolcott's nutrition unit, students talk in-depth about healthy eating, healthy exercising and the reasons. Teachers also focus on the importance of breakfast and how eating breakfast helps in many ways, from maintaining healthy weight to focusing at school or work. Another unit that Wolcott students focus on during health class is CPR, a lifesaving technique they may have to use in the future. The health department strives to give students the skills necessary to be safe and comfortable in many different situations. Additional units Wolcott students cover include: alcohol and drug use; healthy relationships; and social, mental and emotional health. The overarching goal for each unit is to focus on the students' lives outside and beyond of high school when they begin to live and grow on their own.

University of Illinois at Chicago, Chicago, Ill.

Igniting UIC's climate action implementation plan on this biodiverse campus

The University of Illinois at Chicago (UIC) is a vital part of the educational, technological and cultural fabric of the region. As Chicago's only public research university, with 30,000 students, 15 colleges, a hospital and a health sciences system, UIC provides an extremely diverse student body access to excellence and opportunity. UIC's ten year, formal commitment to sustainability builds on a long history of dedication to waste reduction, social justice, health, and the well-being of the Chicago region and beyond.

The programs at UIC that reduce environmental impact and costs are facilitated by the work of the Office of Sustainability (OS) and the Chancellor's Committee on Sustainability and Energy. These efforts are driven by the UIC Climate Commitments to be a carbon neutral, zero waste, net zero water, and biodiverse university. The path to achieving those goals is the UIC Climate Action Implementation Plan, which includes a cost-benefit analysis for these goals, and identifies the implementation partners.

The university has reduced its overall energy use intensity by 33 percent since 2004. In this same period, total campus energy use was reduced by 26 percent. All new construction at UIC since 2008 has achieved a LEED rating, with three buildings achieving Gold status, and one receiving Silver. Eighty-one energy efficiency projects implemented from 2013 through 2015 reduced carbon emissions by 12,600 metric tons, resulting in $1.4 million in energy cost savings. The school currently has two photovoltaic systems that generate approximately 120 megawatt-hours per year. UIC's geothermal ground source heat pump system provides heating and cooling to three buildings. This ground source heat pump system provides 4,444 million BTUs of heating and cooling per year.

The school's commuter mode split for single-occupant driving (40 percent) is less than for the city of Chicago (51 percent) and the broader region (70 percent). All full-time students receive a transit pass for unlimited use during the semester, and employees can participate in a pre-tax transit benefit program, encouraging the use of public transit.

The university's commitment to a net zero water and biodiverse campus is exemplified by several accomplishments. A 2014 EPA Rainworks award winning interdisciplinary student project, "Urban Transformations: A Phased Approach to Green Infrastructure Implementation," is the basis for UIC's green infrastructure

plan. In the first phase, UIC implemented four acres of green infrastructure, diverting 4.2 million gallons per year of stormwater, including the first large-scale permeable concrete parking lot in the region. With nearly 5,000 trees and 100 species, UIC has been a certified Tree Campus USA since 2011, and in 2017 became the first official Bee Campus USA in Illinois. Funded by the National Fish and Wildlife Foundation, the OS and volunteers from Federal Express planted a 2,000 square foot replication of an Illinois native prairie on UIC's west campus. UIC's power plants implemented water savings of approximately five million gallons per year.

All new construction at UIC since 2008 has achieved a LEED rating

The school's longtime commitment to reducing waste has expanded to include many other commodities toward a zero waste goal. In 2017, the school diverted 3466 tons from landfill. Over the last five years, unique waste streams were added, including batteries, writing implements, pipette tip boxes, plastic bags, and personal electronics. The student volunteer Food Recovery Network has collected over two tons of food and provided it to shelters in first quarter of 2018. Food scrap collection diverts pre-consumer waste from the landfill. Outdoor recycling capacity expanded by adding 50 Big Belly recycling stations to the existing eight, increased collection efficiency by 94 percent, reduced transportation emissions, and resulted in a nearly 50 percent recycling rate. The estimated cost avoidance is $31,633/year. In 2016, UIC entered into a hazardous waste disposal contract with a new vendor that reduces the environmental impact of disposal. This contractor takes the 58 tons of waste to a local facility, and uses a technology that allows some materials to be recycled rather than incinerated.

The university offers numerous opportunities for improved health and wellness outcomes for the campus community. The Environmental Health and Safety Office has an Industrial Hygiene Group and a laboratory safety program, and conducts chemical fume hood inspections, biosafety cabinet audits, and radiation safety contamination surveys for those labs that use radioactive materials. UIC's sustainable approach to pest management extends beyond the application of pesticides, and includes reducing the food, water, harborage, and access used by pests by eliminating any equipment, structural features, or management practices

that are contributing to pest infestation. The Wellness Center supports students through individual consultations and referrals, and assists students experiencing food insecurity and homelessness. A pop-up food pantry provided 1,109 bags of groceries to students in the fall of 2017. That year the Wellness Center also conducted 120 workshops and reached 1,707 students on numerous wellness topics. The responsible drinking program reached over 3,919 students.

The Employee Assistance Service provides free, professional, confidential assessments, short-term counseling referrals, and follow-up for UIC employees and their families for mental health, family problems, addictions, and financial issues. They also provide orientation and training to employees, and assistance in connecting to health insurance providers. The School of Public Health developed a staff wellness program that includes competitions, exercise classes, wellness talks, and more.

Urban UIC has a fair amount of open spaces that are available to the casual user and the more devoted athlete. UIC Campus Recreation's two indoor facilities, outdoor courts, and fields enhance learning and promoting healthy lifestyles. There are many green spaces available to the community among the nearly 5,000 trees that sequester 18.1 tons of carbon dioxide/year. UIC offers a discount to the Chicago bike share program, DIVVY.

All food procured by dining services and provided in the dining halls is purchased fresh except for corn and peas. Cost of locally sourced food in 2017 was 42 percent of the total food cost of residential dining services, a 32 percent increase over three years. There are several gardens that produce food for educational purposes: the Department of Biological Sciences, the Heritage Garden, the College of Applied Health Sciences Nutrition Garden, and the College of Education Garden.

Five of UIC's colleges offer courses, minors, and degrees in programs that are related to the environment and sustainability. UIC's newest sustainability-focused program is a minor in sustainable cities, in the College of Urban Planning and Public Affairs. Another innovative program is the Freshwater Lab course, which puts the pressing issues surrounding the Great Lakes before students through the study of the social and ecological dimension, as well as meeting with leaders, site visits, and project work. The Summer Institute for Sustainability and Energy is a two-week intensive summer program that promotes the inclusion of basic energy science research into entrepreneurial endeavors by future scientists, business leaders, and policymakers.

There are co-curricular programs including the sustainability internship program (which has served 145 students since 2014) and the UIC Heritage Garden internship. The student sustainability fee has advanced 38 projects with funds

totaling $856,450. Other units that support research and co-curricular learning are the Institute for Environmental Science, the Latino Cultural Center, the UIC Energy Initiative, and the Institute for Humanities. The College of Engineering received an NSF STEM grant to support the success of academically talented, low-income students, including participation in service learning projects that will work on community problems with engineering concepts.

Iowa

St. Columbkille Elementary School, Dubuque, Iowa

Long-term commitment to holistic environmental awareness

St. Columbkille Elementary is one of seven prekindergarten to 12th grade schools within the Holy Family Catholic School Systems in Dubuque, Iowa. With an urban population of approximately 300 prekindergarten through fifth grade students, the administration and staff has made a commitment not only to educating students on environmental topics, but maintaining an atmosphere that encourages respect and knowledge of the Earth. For over 10 years, the staff has implemented programs and lessons not limited to: recycling, composting, native and prairie plants, and the general reduction of waste. This long-term commitment has created an atmosphere of respect for the environment, and instilled the mindset that the small things individuals do can make a difference in the world.

The greatest example of St. Columbkille's dedication to environmental education is the extensive use of the property as a learning tool. The interest and care for the environment can be seen even before you walk in the school's front doors. A rain garden was constructed in 2013 with students and community members identifying what plants would be best for the purpose of the garden and how to design it effectively, all while learning the function and importance of a rain garden. The garden is appropriately placed at the end of the gym's rain spout system, and at the bottom of two small hills, which provides plenty of water for the rain garden plants to enjoy.

A short walk around the building will bring you to another prime example of using the land directly for environmental education. In 2009, a 50' x 80' section of land was planted as a native prairie plot. This area has a plethora of native prairie plants that are not only helpful to the land itself, but also are used as a versatile educational tool. Students learn how to identify native plants, about invasive species, biodiversity, habitats, ecosystems, prairie plants, insects, food webs, et cetera while visiting the prairie plot. Students are reminded of these lessons when they go

outside for recess throughout their day. In addition to the educational tool this plot provides, it is also ecologically beneficial as the plants soak up water runoff, and provide ample habitat for many small rodents, birds, and insects.

Dedication to respecting the health of the land can be seen when you look around the classrooms. Each room has a recycling bin which is collected and emptied weekly into the city's recycling dumpsters by the fourth grade class. The amount of waste that reaches the recycling bin is reduced at the source simply by reusing paper, using small whiteboards, and providing computers and online programs for school work and to communicate with members of the school community. The entire school also helps reduce the amount of waste entering the landfill by composting in the lunchroom. Each grade is educated on what can be composted, and students place their food scraps in separate bins at lunch. As the students learn about the proper utilization of these services, they take this knowledge and practice to their households.

St. Columbkille uses its property extensively as a learning tool, including this native prairie plot

The physical well-being of St. Columbkille students is just as important to the staff as academics. Upon arrival, students walk around the gym area awaiting the morning announcements. Throughout the day, students enjoy 20-30 minutes of recess outdoors on the football sized yard, which includes a variety of play equipment, as well as a softball diamond and open areas to run. The students go outside for a variety of lessons when the weather permits.

In addition to physical well-being, St. Columbkille also is concerned for the mental and emotional well-being the students and staff. It is a Leader in Me school, and promotes leadership and forward thinking in students from the beginning of their education. This is implemented through direct lessons, as well as activities that guide students to become leaders of their peers and leaders in their own personal and academic goals.

Care for students' overall well-being also is shown through the opportunity for spiritual connection. As a Catholic school, St. Columbkille believes and instills in students that they are caretakers of our world. An outdoor space in front of the school is dedicated to spiritual growth. St. Columbkille recently freshened up a 20' x 40' prayer garden in which students, staff, and community members can sit outside, reflect, and take a moment of peace during a busy school day.

Caring for and respecting the environment begins at prekindergarten at St. Columbkille. Each grade has an environmental theme and focus that is encouraged throughout the school year. Prekindergarten starts its practices with a small outdoor classroom that they play in and maintain. Kindergarten learns about composting, then lessons move on to learning about animals and their needs in first grade. Second grade studies plants, and then energy conservation comes in third grade. Fourth grade tackles recycling, and evolves that knowledge to determining environmental solutions in fifth grade. All of these areas of study involve interactive classroom lessons, as well as field trips to community locations related to the subject.

The school is dedicated to making students aware of how the knowledge gained and behaviors learned within the walls of the school can be expanded to the outside world. St. Columbkille uses community connections through the city of Dubuque and surrounding areas to increase knowledge, as well as to encourage the community mindset that students' behaviors in the classroom affect the community they live in, and therefore, the world. Through the years, St. Columbkille has earned many 'patches' through the Dubuque Metropolitan Area Solid Waste Agency Green Vision Education Program. These measureable growth patches or badges show St. Columbkille's dedication to a variety of environmental practices, and include subjects ranging from a litter free campus, to eco-literacy and energy efficiency.

St. Columbkille is growing in commitment to the environment. Within the next calendar year, the school is revitalizing a backyard program involving the kindergarten class, which is creating a small garden for the early childhood center, improving accessibility of the prairie plot, incorporating more community connections to encourage a larger diversity of incoming knowledge, and increasing the sustainability of environmental education lessons in the classrooms.

The Dubuque community considers St. Columbkille a gold star example for carrying out holistic environmental awareness so extensively that the awareness turns into a mindset and culture. Members of the St. Columbkille community have created an atmosphere of dedication to Mother Earth in their behaviors, while increasing knowledge of the environment by using the outdoor spaces on the campus. All of these efforts are to instill a love and respect for the one world that we've been given, so that the world can be enjoyed now, and in the future.

Kansas

Manhattan-Ogden Unified School District, Kansas

A STREAM of community involvement resulting in rare results

In Manhattan-Ogden Unified School District (MOUSD), in north central Kansas, all students learn, grow, and work to reduce environmental footprint, impact, and costs through millions of dollars' worth of water and energy conservation and savings in tight budget times for the state.

The district's 1,200 staff members, 6,500 students, and 55,000 community stakeholders are working to improve health and wellness to reduce chronic absenteeism and improve wellness for students, staff, and stakeholders; as well as provide effective environmental and sustainability education in order to highlight integrated and culturally inclusive Science, Technology, Reading, Engineering, Arts and Math (STREAM) connections in classroom and community opportunities.

The district has had a longstanding vision to educate each student to be a contributing citizen in a changing, diverse society by championing responsible and ethical decision making to highlight long-term zero waste goals. MOUSD provides all students with future-ready environmental and sustainability lessons at each grade level, in order to prepare for the changing world, as well as build hubs in the community for best practices to be shared as a world-class school district. Uniquely positioned in the Flint Hills region of tallgrass prairie and in the agricultural heartland, MOUSD offers an innovative space for learning. The district has completed incredible student-centered projects districtwide at multiple sites with evidence-based results.

The timeline of the district's collective efforts date back to many individual efforts of teachers and staff over many years, all of whom have led the charge to support sustainable change. More recently, MOUSD has centralized and moved forward in key goals and targets each year. The 2013-14 school year started with seeking input, data, and funds through grant writing and waste audits. Since 2013, the district has been awarded some $250,000 from local, state, and federal sources to invest in specific projects that have allowed students to have equitable access to tools for environmental learning. With very limited district funding, this was a key first step to invest into a long-term vision of supporting student success with sustainable and communitywide efforts to make lasting change. In 2014-15, MOUSD focused on schoolwide recycling. The entire district has been diverting millions of pounds of trash from the solid waste stream into commingled recycling bins. A local business partner even helped bring recycling to Ogden, Kan., a small rural community.

In 2015-16, students across the district completed in the FIRST Lego League Trash Trek Robotics Curriculum. All schools have used this dynamic and innovative curriculum with imaginative thinking and teamwork. Guided by adult coaches, FIRST Lego League teams research a real-world problem of recycling and are challenged to develop a solution. Teams designed, built, and programmed robots to apply STREAM concepts, along with a big dose of imagination, to solve current and future environmental challenges. Project-based learning supports individual plans of study and future careers.

In 2016-17, a highlight was the creation of makerspaces called Repurposing and Recycling Education Space (RARES). These makerspaces serve as a gathering point for low-tech tools, recycled products, project-based learning, open inquiry projects, reverse engineering, and creative expertise. RARES are zones of inquiry and self-directed learning. They provide hands-on places for building prototypes and models of student ideas, from wind powered covered wagons in one fourth grade class to recycled robot characters for writing projects in sixth grade. These RARES spots, in libraries, community learning centers, and classrooms, feature tools and raw materials to support repurposing, recycling, and invention. Each of the district's nine elementary schools invested some $6,000 to create RARES.

MOUSD students use the pristine prairie to investigate plants, animals, ecosystems, and environmental disturbances

Most recently, in 2017-18, MOUSD has organized Go Green Champions and leadership teams. Powered by teacher and community leaders, the district has built new levels of capacity and empowered action plans among staff and students with a renewed effort on green teams at each of the district's 15 schools to support ongoing efforts and build new ideas around lessons and projects. The name is an acronym: G-Generating O-Opportunities for G-Globally R-Responsible E-Environmentally E-Educated N-Next Generation Leaders (GO GREEN). MOUSD has created a district Green Champion team connecting faculty, students, community partners, and parents from each school in an effort to affect widespread change in classrooms, homes, and the entire community. The team meets six times throughout the year and for a week each summer to support members, brainstorm solutions, and organize community gatherings highlighting environmental education.

Students exemplify the ideals of reducing environmental impact and costs, improving health and performance, and increasing sustainability literacy. As part of the district's accreditation model, there are specific sustainability and wellness goals in two areas: 1) relevance with student engagement; specifically student personalized learning, and 2) responsive culture with district climate. Wellness policies in the district include ensuring environments and opportunities for all students to practice healthy eating and physical activity behaviors throughout the school day. Students receive quality nutrition education that helps them develop lifelong healthy eating behaviors; schools engage in nutrition and physical activity promotion and other activities that promote student wellness; staff are encouraged and supported to practice healthy nutrition and physical activity behaviors in and out of school; the community is engaged in supporting the work of the district in creating continuity between school and other settings for students and staff to practice lifelong healthy habits; and the district establishes and maintains an infrastructure for management, oversight, implementation, communication and monitoring of the wellness policy and its established goals and objectives.

The district has fully incorporated the NGSS at all levels prekindergarten through 12th grade, with strong curriculum, project-based learning with makerspaces, and career paths. Students at Manhattan High School West Campus (MHSW) who take Environmental Science (or the advanced placement options) focus on deep learning of natural systems, and how to remediate the effect of humans on said systems. The class is divided into balanced topics based on earth systems, living world, populations, land use, energy resources, pollution, and global change. Students gain extensive lab and field experience. In addition, students participate in the district-led green initiative by serving as members of green teams at buildings, and finding the best projects to fit their culture. One school with a mascot of dolphins partnered with Sunset Zoo to raise some $500 in a local project called "Pennies for Porpoise" to reclaim habitat and establish a breeding program for the critically endangered vaquita porpoise.

Environmental Science Investigations, a co-curricular club that investigates waste and inefficiency around the school, is transforming an outdoor school commons area into a pollinator garden and implementing a schoolwide composting program. The club manages nearly 40 recycling bins that collect recyclable materials such as paper, plastic, and aluminum all in one. As students are the ones who put the program in place, they are motivated to see it succeed.

As a diverse and dynamic community with shifting demographics, MOUSD benefits from established partnerships like Kansas Green Schools, multiple Kansas State University connections, and strong relationships with more than 60 community organizations, businesses, and individuals. Collaboration and instructional excellence are hallmarks of a culture centered on student success. All of the

district's work and successful outcomes give a backbone to district's core values: Students thrive in a safe, positive, and accepting environment.

Kentucky

Meadowthorpe Elementary School, Lexington, Ky.

Where even the class pets eat locally

Meadowthorpe Elementary School serves 455 students, 44 percent of whom are.eligible for free and reduced price lunch.

Each year, the STEM lab teacher works closely with a student energy team and the district's E=Use2 sustainability program in order to learn about, measure, and monitor the school's energy usage. Then, this team educates staff and students about practices that can be improved to lower environmental impact and cut costs. For example, this team has placed reminder stickers on every classroom's light switch and any other appliances to remind students and teachers to turn off their lights. This team places "oops" and "thank you" notes on classroom and office doors as a reminder of how students and faculty can improve on things they are doing that are making a difference in a positive way. The student energy team conducts monthly energy audits. Every room has automatic electric lighting controls. The cafeteria holds energy reduction lunch days monthly, where they offer lunches that are prepared without using the ovens and other equipment. Meadowthorpe has an ENERGY STAR Portfolio Manager score of 82, and uses School Dude Utility Direct.

The school partners with many agencies to provide improved student wellness, such as a mobile dental clinic, weekend food bags from local churches, and providing new and used clothing and shoes from The Lexington Women's club and Kiwanis club.

The school also has a recycling team that makes sure every classroom and office in the building has a recycling bin that is emptied each week. In 2018, the recycling team purchased four large cans on wheels in which to collect recycling around the school. These cans have allowed the recycling to be collected without using bags. The recycling team creates and places educational posters in classrooms at the beginning of each year to remind students which items can and cannot be recycled. The school collects plastic lids, and had them remade into benches and picnic tables for the school. Meadowthorpe also oversees a marker recycling program as well. All teachers and staff have a monthly limit on copies, and double-sided printing is encouraged.

Meadowthorpe has permeable pavers and a rain garden that is maintained by the garden club, in addition to native landscaping and an outdoor classroom area. The school recently began a no-idling campaign to improve outdoor air quality and, despite no state requirement for testing, Fayetteville Public Schools monitors for radon, which frequently measures high in Kentucky. Seventy-five percent of cleaning products are environmentally preferable, and the pest management program is green certified as well.

Meadowthorpe's active wellness committee meets monthly to review policies and put in place activities and plans to improve student and staff health. These include an annual Field Day, the Bicycle Rodeo safety program, a roller skate safety program, nutrition units in physical education class, the Presidential Physical Fitness test, and anti-bullying units in technology lab and with the school counselor. After school programs dedicated to wellness include Girls on the Run, MISS and Confidence (self-esteem, bullying, wellness topics, etc.), Girl Scouts, and a cooking club. The school participates in Red Ribbon Week, Safe Schools Week, and Healthy Heart Awareness Month. It employs the Second Steps curriculum, and weekly lessons regarding social skills, safety, wellness, et cetera, from the school guidance counselor. An annual Fitness Night is offered for staff, students, and families. Meadowthorpe is staffed with a school nurse, school psychologist, two licensed clinical social workers, a certified social worker, and the principal has a background in mental health. The school partners with many agencies to provide improved student wellness, such as a mobile dental clinic, weekend food bags from local churches, and providing new and used clothing and shoes from The Lexington Women's club and Kiwanis club.

The cafeteria offers fresh, local produce for students. The school's garden club grows food in raised beds and learns different ways to use them in recipes. Meadowthorpe also feeds class pets from its garden. At after school events, only water is available.

The STEM lab and homeroom classes provide the bulk of environmental and sustainability education. A new schoolwide reading series has integrated many science topics so they can be easily incorporated into students reading and writing. An annual STEM night hosts presenters such as the University of Kentucky, Bluegrass Community and Technical College, The Fayette County Health Department, Lexmark, and Alltech, and have hands-on activities and presentations. Many different grade levels work with 4-H, the Kentucky Department of Fish and Wildlife, and other agencies to help teach environmental and sustainability topics to their students. Meadowthorpe uses Project WILD and Project Learning Tree teaching resources.

Students use the outdoors to study habitats, ecosystems, seed dispersal, and pollination. They use the rain garden to discuss environmental issues and the storm drains from parking lots. They investigate the patterns of the sun and how the heat and light affect the building, which leads to environmental discussions. Classes use the outdoor classroom benches in the front and back of the school to do writing and other lessons.

Maryland

Newport Mill Middle School, Kensington, Md.

The environment as an integrating context for student-based inquiry

Newport Mill Middle School is located a suburb of Washington, D.C., in a very diverse, growing, and changing community and serves 637 students in grades six through eight. The school is culturally and economically diverse, with 50 percent Hispanic, 15 percent Black, 21 percent White, eight percent Asian, and four percent of students identifying as other. Within this ethnically diverse population, 52 percent of students are eligible for free or reduced price lunch, 25 percent receive special education services, and 10 percent are enrolled in English for Speakers of Other Languages. A Learning for Independence program designed for students with complex learning and cognitive needs, including mild to moderate intellectual disabilities, makes up nearly seven percent of the student body.

Newport Mill hosts the International Baccalaureate Middle Years Programme (IB-MYP), an internationally adopted framework for designing authentic assessments, generating student-based inquiry, and creating real-world scenarios in which students can engage actively. The environment is used as an integrating context for precisely this kind of learning; thus, environmental literacy is woven naturally into instruction. IB-MYP is not an exclusive program limited to a section of the school population; it is a schoolwide program that holds all students to rigorous academic standards and cultivates in them a series of learner attributes (balanced, risk-taking, inquirer, reflective, open-minded, principled, communicator, knowledgeable, thinker, and caring) that will make them successful in any future endeavor.

As an IB-MYP school, Newport Mill seeks to develop active learners who are internationally minded and who build transferable and marketable skills necessary to help advance the global community. To this end, the school's instructional focus focuses on establishing student-centered learning environments that promote critical thinking, academic communication, and argumentative writing – these three are why the environment is often a topic of choice for rigorous learning at Newport Mill.

Newport Mill has been innovative in developing schoolwide Interdisciplinary Writing Assessments (IWAs) that engage students in synthesizing disciplinary knowledge to demonstrate interdisciplinary understanding. These IWAs specifically support environmental literacy and promote health and fitness. In fact, last year, students engaged in an IWA that demonstrated their thorough understanding of physical fitness components and mathematical budget restraints by assuming the role of an athletic director and writing a proposal for purchasing equipment to improve physical health and fitness, a real-world situation.

Newport Mill students collecting invasive species

This year, Newport Mill students used their understanding of the physical fitness components and mathematical calculations to create a daily fitness plan based on percentage of calories burned in each fitness category. Students also wrote a letter to a construction company addressing the potential environmental impact caused by the acquisition of land for a new housing development in the community, and they used their knowledge about the digestive system to evaluate an informational video to determine its accuracy and objectivity in presenting the effect of an over-the- counter antacid on healthy digestion. All of these IWAs engaged students in a deep exploration of concepts rooted in environmental literacy and health and fitness.

Students are involved in myriad environmental initiatives, including helping to create an outdoor classroom, a school energy and recycling team, and a schoolwide Science and Engineering Expo. Students also are involved in the PEPCO National Energy Education Development's MakerFair, as well as EnviroScape lessons and stream study with the Audubon Naturalist Society. To serve the larger community, students from NMMS conduct service projects to remove invasive plants and collect native seeds for tree restoration programs during outdoor education week. The green team makes special morning announcements to engage their fellow citizens in helping to conserve electricity and recycle.

Newport Mill's outdoor classroom has become a permanent part of several content areas. Staff members regularly use the area for teaching an array of subjects. For example, French classes play boules; English classes perform Shakespeare skits; and art teachers conduct "Art in the Park." The Learning for Independence classes

maintain the perennial garden at the school entrance. Three days of outdoor education at a residential site allows all sixth graders to expand their learning outdoors.

Sustainability is woven through science, social studies, and even art. Students investigate environmental and sustainability concepts in their project-based units on habitats, going green, and alternative energy. They learn foundational ecology while they investigate a local species and design a habitat that will allow the organism to survive. They improve natural resource use by devising a sustainable design for a district facility. They also design and build a solar collector. Students connect environmental factors to where people live and how their cultures evolve. They study hydroponics and its use in modern agriculture. They conduct research into the effects of environmental change in Latin America. They write advocacy letters in social studies that focus on an environmental topic of their choice. Art classes use recycled materials throughout the year, and created a mural made from recycled glass and plastic in the media center.

Newport Mill was the recipient of the National Foundation for Governors' Fitness Council's "DON'T QUIT" fitness center designed specifically for middle school students. This $100,000 state-of-the-art fitness center has elevated the opportunities for students to maximize their physical fitness workout to reduce obesity and promote a healthy lifestyle, while providing an opportunity for the school to focus on wellness, both physical and mental. Newport Mill aims to use this unique chance to help students and the community to build healthy habits that will last a lifetime.

The school has an ENERGY STAR Portfolio Manager score of 88, and reduced greenhouse gas emissions by 20 percent over a three-year period. Students of the green schools club partner with the school energy and recycling team to collect paper recycling and ensure low-energy lighting distribution throughout the building. Classrooms use low-energy lamps and turn off lights when natural light will suffice. The green schools team created lamp switch reminders and posted energy savings reminders. The use of water bottle filling stations is promoted, printers are automatically set to double-sided printing, and the newsletter is distributed electronically.

Manchester Valley High School, Manchester, Md.

Modeling state green schools program recertification

Beyond its solar light hallways, geothermal water and air heating and cooling systems, and student-generated "turn off the lights" mini-posters around light switches, Manchester Valley High School (MVHS) has come together to create a model for reduction in environmental impact and cost within Carroll County Public Schools. Manchester's School Improvement Plan for the past two years has included goals of recertification as a Maryland Green School and U.S. Department of Education Green Ribbon Schools recognition. Manchester Valley High School's Maryland Green School recertification documentation is now being used as an example for other schools in the state certification program.

Through administrative, staff, and student-driven efforts to reduce paper waste by pushing digital curricula, recycling, and composting programs, Manchester Valley has achieved a 50 percent reduction in landfill waste. The facility is outfitted with automatic faucet shutoffs and landscaped with water conserving native plants. Science and agriculture programs incorporate hydroponics, aquaponics, and rain barrels to conserve water. To conserve electricity, lights are turned off after school hours, and Manchester celebrates "Watt-Free Wednesday," when staff members are encouraged to turn off the lights during school hours. Classrooms have motion-sensors on lights. These technologies and practices have enabled Manchester to cut greenhouse gas emissions by close to 50 percent per capita over two years.

Meticulous Maryland Department of Health inspectors, the MVHS School Safety Committee, interdepartmental safety inspections, and even the incorporation of student data keeping in classes such as AP Environmental Science enable students to play an active role in collecting real-time data to assess school air quality. Schoolwide weeding events help prevent the use of herbicide. Prevention is the primary method of pest management. Specific sawdust-collecting air handling systems were purchased in 2016 for the tech labs to reduce particulate matter.

Manchester Valley is a school on the move. From fundraising walks like Relay for Life to supporting Special Olympics athletes, to community races and the Polar Bear Plunge, the school community revels in FitBits and makes miles count. From the MVHS Social Committee, which offers to organize a team for upcoming Chesapeake Bay Bridge Half Marathon, to the Class of 2014's Cinco de Mayo five-kilometer run, to the fall Maverick Fun Run, to the Battle of the Bypass competition with another school, there is a run for all occasions. It is not unusual to see several staff members walking or running before or after school around the track, parking lots, or on the school's hiking trails.

A recent partnership with Life Bridge Health and the American Heart Association in donating CPR teaching aides and instructing students on use of AEDs brings health class students life-saving knowhow. Also, periodic schoolwide meetings incorporate requirements to update staff on the use of Epi-Pens, student and staff medical emergency procedural changes and reminders, and vaccination opportunities by a school nurse. Manchester was the first high school in the county to hold a schoolwide symposium to inform students of the scope and severity of the opioid epidemic.

All educators are encouraged to take their classes outside to use the campus stream and wetlands. A wooded outdoor classroom is complete with seating and functional flat workspaces, and maintained by students. Manchester also features a shaded outdoor café-style breakfast and lunch area that is frequently used for staff meetings and class activities. About 30 percent of school grounds are devoted to the two outdoor classrooms, a 10,400 square foot bed to be converted to a pollinating garden, a wetland designated as an endangered bog turtle habitat, a system of wooded hiking and streamside trails, and a "no mow zone" wildflower area.

Manchester Valley students clean up an outdoor space on school grounds

Environmental literacy is a systemic and interrelated collaboration that extends beyond isolated curricular islands. For example: A Science Research II student designs a hydroponic tomato experiment that was funded by an aquaculture grant written in her Agricultural Science class last semester, and funded by the Maryland Sea Grant College and NOAA. During the semester, she may be assisted by students in a program for special needs called Living For Independence. Her results are then recorded by a student in Script and Video Class, and perhaps highlighted in the school newspaper and yearbook. Since it takes all summer to grow tomatoes, her final tomato product is prepared the next fall by the students in Foods class, or by kitchen staff for school lunches in early fall. Meanwhile, the green vegetable food scraps are taken back to the science research compost pile to be used for another student and to create habitat for bugs to be used in biology classes for the bug behavior lab and the soil succession lab by Terrestrial Environmental Science students that following winter. Meanwhile, she will submit her written research to professional journals in the field.

The school works in tandem with Carroll County Outdoor School, Northrup Grumman, Monsanto, Trout Unlimited, Carroll County Forest Board, the Coastal Conservation Association, and the Chesapeake Bay Trust. It also brings in various guest speakers and consultants in the field for students to participate in mentoring and to learn about career paths such as energy efficiency technologies, bat habitat restoration, and aquaculture innovations. Specifically, the Owings Mills, Md.-based company Tetra Tech has donated materials, provided speakers, and green technology internship opportunities for agriculture, technology education, and science research students.

Students learn civic skills through speaking engagement opportunities with an environmental and sustainability topics such as the Aquarium Society of Lancaster County, FFA National Leadership Conferences, and Carroll Biz Challenge. Last year, six Manchester students' articles placed first or second with the Federation of American Aquarium Societies. Students also have been recognized at the Carroll County Envirothon.

World history classes require research on the extent of non-native species and effect of the industrial revolution on habitats. Tenth grade English classes incorporate organic farming versus traditional big agriculture in argumentative writing. Physical education classes have included campus trash and recycle clean-up activities. The agriculture classes follow the national Curriculum for Agricultural Science Education model, which advocates for innovation in the reduction of pesticide use. Technology classes design and test wind-generated electric technologies. The newspaper and yearbook members write feature stories celebrating sustainability activities.

Massachusetts

Arlington Public Schools District, Massachusetts

Raising awesome, powerful, change makers

The Arlington Public Schools (APS), in Arlington, Mass., consist of seven elementary schools, one middle school, and one high school; in all, the district serves over 5,000 students. Part of the APS mission includes "preparing students for responsible participation in an ever-changing world," and reducing environmental impact, improving health, and providing environmental education are integral to this mission. The town of Arlington was designated a Green Community by the Massachusetts Department of Energy Resources in 2010. Among other things, APS earned this designation by committing to reducing municipal energy use by 20 percent within five years, a goal the district met in 2014.

The APS district works to reduce greenhouse gases through a variety of initiatives, including: composting lunchroom food waste; solar panels on six of nine school buildings (with display screens in each of the participating schools to educate the school community about how much clean energy each school is producing); installation of new, efficient natural gas boilers; LED exterior lighting; kitchen upgrades; steam trap upgrades; installation of energy management systems; and recent school rebuilds. The high school rebuild project is pursuing a net zero energy design.

Students at Arlington Public Schools' Brackett Elementary gather pumpkins after Halloween

There are many programs and initiatives in the APS district that address the nutrition, fitness, mindfulness, and overall health of students and staff, including a) the Arlington Eats program, which provides daily healthy snacks (e.g., fruit, cheese sticks, yogurt) to students, especially those at the Title I schools in the district, and, through a collaboration with the Arlington Food Pantry, provides meals to families during school vacations, the summer, and a community dinner once a month; b) Fit Girls for elementary school students, led by teachers and school social workers and based on the Girls on the Run national model; c) heart rate monitors for ninth grade physical education students to help them learn more directly about heart rates, training zones, and cardiovascular fitness; d) mindfulness-based programs for students and staff (facilitated by school nurse, social worker, occupational therapist, and teachers) at Hardy and Thompson Elementary Schools and at the Ottoson Middle School); e) a diabetic care coordinator who oversees the health related issues for the district's growing population of students with type 1 diabetes, and runs a related parent group; and f) the Open Circle program at all the elementary schools, which provides evidence-based social and emotional learning.

In the elementary and middle schools in the APS district, many of the science classes address environmental topics, aligning with the Massachusetts science and technology/engineering curriculum framework. Examples include a unit in earth and space sciences in kindergarten that explores how plants and animals (including humans) can change the environment, and a sixth grade technology/engineering unit that gives students a design challenge and asks them to consider potential effect on people and the natural environment. Arlington High School offers a

standard and an AP Environmental Science class, as well as biology, astronomy, and oceanography. In a class called Current Issues, climate change, the Paris Climate Agreement, and environmental protection topics are included.

In the Introduction to Public Policy class, which is a college level class that is part of Syracuse University's Project Advance program, many students choose environmental topics for their final project. Past final project titles have included "The Redistribution of Food in the Cafeteria to Reduce Food Waste" and "A Policy to Reduce the Amount of Plastic Water Bottles Used at AHS."

The Arlington Public School district is dedicated to reducing environmental impact, improving the health and well-being of students and staff, and providing curricular and extracurricular opportunities for environmental learning and action. The need and ongoing support for the Arlington School Sustainability Coordinator position reflects the value the town places on sustainability initiatives in the schools. This past school year, there has been increased interest in expanding waste reduction and environmental education programs such as lunchroom composting (a junior recently proposed a composting pilot for the high school), textile recycling (the APS superintendent proposed partnering with the Bay State Textiles program), and school gardening (the Arlington Garden club will offer an annual stipend to support school gardens, beginning this spring).

The APS district serves as a model for surrounding communities in its environmental sustainability efforts. Green team students at Thompson Elementary School wrote and performed a song (with ukulele accompaniment) upon learning last year that their efforts led to replacing their foam lunch trays with compostable ones. The lyrics: "We are awesome, we are powerful, we can change the world!"

Mendon-Upton Regional School District, Massachusetts

Preserving the Earth's precious resources

Over the past several years, the Mendon-Upton Regional School District (MURSD) has made a strong, concerted effort to do its share to reduce greenhouse emissions, and in the process, be very public about the process with students and the community. Within the last two years the district has entered into a net metering solar power purchase agreement. The contract calls for 2.4 million kilowatt-hours of solar production, as the production is generated from two ground arrays in Dighton, Mass., and a series of seven large solar carports on the campus of the district's middle school, Miscoe Hill Middle School. These structures have become a valuable

visual reminder of the importance of renewable energy both for students and the community.

The MURSD has been using strictly green cleaning products for at least a decade. The district's director of facilities and grounds procures products to be used as cleaning agents that are only Green Seal certified. Additionally, all paper towels and toilet tissue and paper towels that are use rapidly renewable fiber, made from eucalyptus and acacia trees, which can be harvested every six to eight years, which is less than half as long as traditional old growth trees. As paper products, they also biodegrade much more rapidly. Throughout all school bathrooms, Green Seal foam hand soap is used. This soap produces less lather, and thus enables quicker rinsing and less water usage.

Students lay down compost at Nipmuc Regional High School, in MURSD

Spearheaded by students at the district's high school, Nipmuc Regional High School, the district has begun to address the issue of food waste. The Food Services Department has forged a new partnership with Maple Farms Sanctuary in Mendon (http://www.maplefarmsanctuary.org/) to take food waste from cafeterias to feed the approximately 100 rescued farm animals that live on the sanctuary. Certain uneaten food waste (mostly fruit and vegetables) is collected and donated to the sanctuary each Wednesday and Friday. This program has been educational for students at all four schools, and has engendered a great deal of goodwill in the community.

Environmental education is pervasive throughout the district at every level. Although the emphasis for the youngest learners is on literacy and numeracy, environmental science is embedded within the school culture. In recent years, Nipmuc Regional High School has expanded its program of studies to include a range of courses that allow students to explore environmental education. In fact, all of Nipmuc's freshmen take an additional, innovative course called Ecology and Populations that provides project-based learning opportunities for students to investigate the biology of populations and their interactions with the environment. Students explore how living and nonliving components of the Earth have changed through time and continue to change to create the diverse and extraordinary world in which we live.

Mendon and Upton are two bedroom communities, but their foundation is clearly rural and agricultural. The district is very fortunate to have a community that deeply values its natural resources. Both communities are conservative in nature, and in the context of the true, apolitical meaning of the word: residents value preserving the Earth's precious resources. Thus, environmental education is very important to parents and community members. As the MURSD is committed to learning in a modern context, it is also committed to providing environmental education and sustainability across all content areas for all students. Not only is it in the curriculum—the formal curriculum, informal curriculum, and in enrichment activities—it is embedded in the very culture.

Minnesota

North Park Elementary School, Fridley, Minn.

Blooming to great heights in every Pillar

North Park Elementary School, in the Columbia Heights Public School District, has been on an environmental stewardship journey to reduce its environmental impact and operational costs for many years. Its dedicated staff and students have committed to creating a learning environment that reduces impact on the environment, improves student and staff health, and provides effective environmental and sustainability education.

Approximately 20 years ago, North Park's green journey began when the building organized all school paper recycling in each classroom and office area. North Park's mission to help the environment went a step further when the school district joined a program called Schools for Energy Efficiency (SEE). North Park led the district in reducing their operation cost of energy by educating staff and students on ways to reduce energy usage. North Park Elementary reduced its energy use by nearly 10 percent, and was recognized in the top 25 percent in the nation for efficient operations with an ENERGY STAR rating of 92. While participating with SEE, the school installed light motion sensors to ensure that lights would automatically turn off when there is no motion detected within a 10-minute period.

North Park's awareness and commitment to the environment continues to grow each year. To complement the North Park school recycling program and energy conservation efforts, the school implemented a cafeteria composting program in 2012. Along with all food scraps, students and staff also compost paper towels from the restrooms. Due to the success of this environmental program, North Park received an award from Anoka County Board of Commissioners for an innovative

recycling and composting program that has reduced overall landfill waste by over 90 percent.

In 2013, North Park's third grade project-based learning approach helped students develop plans to transform an idle weed-infested courtyard into an engaging all-school edible garden. Within a year, a team of dedicated staff members wrote several grants and created a 1,800 square-foot garden active learning space over the summer. North Park's courtyard garden beds are made from composite recycled plastic. The soil brought in is organic, and the landscape fabric (weed block) under the wood chips is made from post-consumer plastic bottles.

Each grade level, as well as the developmental cognitive disabilities program, has its own raised bed. Throughout the garden, there are educational signs, several flip benches that quickly can be converted into tables, and a corner garden composting area. The garden also has a bench made from 1,000 plastic milk containers next to a wildflower pollination area.

North Park student scientists gather data in the courtyard garden

Along with the courtyard garden, North Park students and staff have access to the district's Blooming Heights edible schoolyard and outdoor classroom. Columbia Heights Public Schools has a full-time agricultural specialist who provides instruction and resources to promote academic achievement and healthy nutrition for all students. The agricultural specialist also visits North Park on a regular basis to work with all students in the courtyard garden and in the classroom, with lessons focusing on nutrition, sustainable gardening, and the environment.

Organic matter created by worms in the school science lab is brought to the courtyard garden to enrich the soil. North Park also collects its gray water. Uncontaminated water from experiments, aquariums, crayfish bins, et cetera, is poured down a science lab table with a sink and collected in eight liter containers. This water is used to water indoor plants. These plants provide aesthetic beauty throughout the school and help provide cleaner air for students and staff. In addition, the Tower Garden, a vertical, aeroponic growing system, allows students to

grow up to 28 vegetables, herbs, fruits, and flowers in less than three square feet. Throughout the school year, students can grow and eat produce right in the science lab.

Also in use in the science lab is an aquaponics aquarium that combines raising aquatic animals (fish) with hydroponics (cultivating plants in water). The natural fish waste fertilizes the plants, and the plants clean the water. This is a perfect tool to teach closed systems and an excellent example of sustainable farming techniques. In addition, for all science units that require batteries, the lab only uses rechargeable batteries, eliminating waste and saving the school money.

Through several districtwide health improvement partnership grants from the state, students are served a fruit or vegetable snack three times a week, and enjoy a daily salad bar. The grant has also facilitated a Yoga Calm initiative, which has assisted many teachers in successfully redirecting student energy and helping students to gain a stronger ability to focus and demonstrate self-control.

Finally, the most recent addition to North Park has been one of the most exciting. The school now features a 60 kilowatt solar array system on its roof. One year of production is the equivalent of the offset of carbon dioxide emissions from burning 56,250 pounds of coal. During science classes, students often will climb to the top of the steep hill behind the school to look down on the solar panels, and discuss with their teacher the impressive power of the photovoltaic arrays harnessing the sun's energy.

North Park is committed to continuing its environmental stewardship journey and to creating a learning environment that improves student and staff health as well as provides effective environmental and sustainability education.

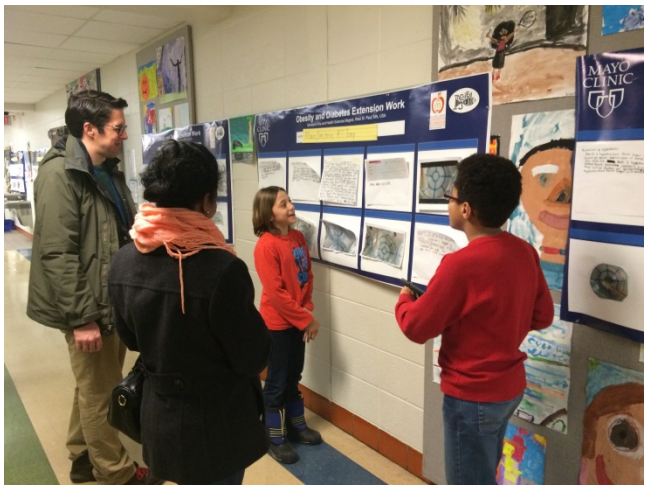
Moreland Arts and Health Sciences Magnet School, West St. Paul, Minn.

Solar pride InSciEd a sustainable district

Moreland Arts and Health Sciences Magnet School serves more than 383 students from the communities of Eagan, St. Paul, South St. Paul, West St. Paul and Mendota Heights, Minn. Moreland is fortunate to have a vibrant school community committed to cultivating creativity, healthy living, and achievement through active learning.

Last spring, Moreland flipped the switch on rooftop solar arrays estimated to save the school district nearly $150,000 in electricity costs over the next 25 years. The

project is expected to offset nearly 72,000 pounds of carbon dioxide emissions annually. The school district had zero upfront costs to install the solar array, and will pay lower electricity rates over the next 30 years or more. This solar project is in line with the entire district's aims to promote energy savings and reduce greenhouse gases, using low- or no-cost strategies. Moreland is excited to be the first school in the district to have rooftop solar panels and is exploring ways to use the solar dashboard in the classroom. The dashboard displays daily solar energy production and avoided carbon dioxide emissions.



Moreland students presenting at a poster session through the InSciEd program

Moreland is committed to operating its building 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 all schools and offices. Moreland has a LIVEGREEN club consisting of third and fourth grade students and a teacher. The team helps implement low- or no-cost strategies to reduce energy use and promote recycling and composting, and focuses 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 conservation efforts, Moreland has avoided spending some $4,100 in energy costs since 2008, even with 28 percent more students.

Last spring, led by its LIVEGREEN program and with assistance from University of Minnesota Extension master gardeners, a pollinator-friendly plan was put into action. As a pollinator-friendly community, District 197 will minimize the use of insecticides and pesticides maintain existing and create new pollinator habitats, establish lawn mowing schedules that protect pollinators and promote pollination, and use native plants to support pollinators in landscaping, when possible. Lawn signs in designated areas explain to the community the pollinator-friendly practices. "Does the grass look longer? Our mowing schedule has been adjusted to protect and promote pollination. Welcome Pollinators!"

The school has replaced older full-size diesel powered special education buses with newer type 3 gas buses to reduce emissions and improve fuel mileage. Moreland

also has partnered with Donaldson Corp to install doc mufflers and engine breather kits on all buses 2003 and older. The school requires positive bus registration from all students, which cuts down on unnecessary routing and saves fuel. Last year, Moreland added nine more propane-powered buses to bring the cleaner energy fleet to 10. Propane-powered buses reduce emissions and improve reliability during cold months.

Since 2009, Moreland has had single-stream recycling schoolwide and organics collection for lunchroom waste. To help students get it right at the bin, there are labels on every single bin. LIVEGREEN club events are scheduled throughout the school year, and include MOVEGREEN, Lower the Lights, LIVEGREEN Week, Earth Day, and a compost sale in the spring. LIVEGREEN is always looking for smart, green, and efficient practices to incorporate into the school. The LIVEGREEN club promotes recycling and composting, water waste reduction and energy conservation.

Two water bottle filling stations were installed at Moreland last year. These hydration stations deliver a clean water bottle fill and enhance sustainability by minimizing dependency on disposable plastic water bottles. Teachers and staff also have easy access to a purified water system to fill water bottles.

Thanks to a generous grant from C. H. Robinson Worldwide, Inc. and the Let's Move Salad Bars to Schools initiative, Moreland operates a salad bar that features a variety of fruit, vegetable, whole grain, legume, and low-fat dairy options during breakfast and lunch.

All Moreland students participate in InSciEd Out curriculum modules throughout the year. The InSciEd Out program is a partnership with the University of Minnesota. Through the training they receive, teachers deliver hands-on science curriculum that excites students while meeting education standards. Teachers design and develop engaging curriculum and teaching techniques using real-life science experiments to drive student led research, inquiry, and engagement. Students learn how to ask questions and discover their own answers to prepare them for a science- and tech-focused world. Through the InSciEd Out curriculum, students create and share a poster highlighting the work and findings.

River's Edge Academy School, St. Paul, Minn.

Boundless experiential and environmental education through partnerships

River's Edge Academy (REA) is an environmental charter high school in the Westside neighborhood of St. Paul, Minn. REA challenges students to discover their greatness by learning through experience in a small, supportive community. The school takes pride in its low student-to-staff ratio: REA caps enrollment at 80 students and has 16 full-time staff members. Fifty percent of students receive free or reduced-price lunch. REA demonstrates its commitment to environmental learning through conscientious use of the facility and ongoing reductions in resource use, as well as unique courses that incorporate environmental learning, the outdoors, and integrated health curriculum.

At REA, students and staff work together to use resources wisely and reduce environmental impact wherever possible. This is achieved through comprehensive monitoring of energy and water use on the B3 Benchmarking platform and ENERGY STAR Portfolio Manager, where the school is certified with a score of 82. REA has reduced electricity usage by installing more efficient light fixtures, installing motion sensor light switches, and by using LED task lighting in classrooms when possible. REA uses Xcel's Windsource program to receive 100 percent of its purchased energy from wind power. The school has programmed thermostats to turn down during off-peak times, put up insulating film on windows, and reduced the temperature of its water heater by 20°F.

The school has aerators on all faucets, and reports all leaks to the building owner within 24 hours to reduce the amount of water wasted. The school has cut the amount of waste sent to the landfill by initiating a compost collection and a thorough recycling program, working with Ramsey County to improve waste bin placement, signage, and educational outreach. REA maintains these facilitywide environmental initiatives with the help of staff professional development and by posting student-designed conservation signage around the school.

River's Edge provides reusable service ware for all meals. Students remove waste from the building and, before throwing it in the dumpster, they weigh each source of waste. This tangibly demonstrates increases and reductions in waste each day. REA works closely with its waste hauler, Republic, to recycle as many items as possible, including often-restricted items like plastic bags, shredded paper, and batteries. REA prioritizes building partnerships with organizations that have strong commitments to reducing waste. The school works with Patagonia to take in clothing that is slightly damaged or used beyond resale, and give this gear to students in need. REA purchases used laptops from Minnesota Computers for Schools, and, if a computer is used beyond repair, donates it to PCs for People.

Beyond the facility, REA encourages the use of public transportation by being in close proximity to the downtown transit hub, to and from which it provides a free shuttle. REA aims to make it easy for students to bike to school with a free bike share program and classes that teach bike safety.

River's Edge is committed to providing students with comprehensive health education, as well as a healthy environment in which to learn and work. In 2018, REA worked with the Minnesota Department of Health to monitor indoor air quality at the school. REA measured under all recommended allowable levels for common air contaminants and pollutants and met all standards for quality indoor environments.

River's Edge students snowshoeing at Harriet Island Park

River's Edge is in an ideal location to make use of the outdoors as an educational and recreational resource. REA's outdoor classroom includes a vegetable garden and chicken coop, and the school is located across the street from the Mississippi River and Harriet Island Park. REA works with partners like Voyageur Outward Bound School, Neighborhood House, Clinic 555, Family Tree Clinic, Face to Face, Planned Parenthood, and other local individuals to bring an array of physical, mental, and sexual health education options to students throughout the year.

One aspect that draws students to REA is a focus on experiential education, which includes a strong emphasis on environmental learning. A flagship REA program is a four-day, three-night hiking trip on the Superior Hiking Trail with Voyageur Outward Bound School. Students also partake in intensive courses twice a year, during which they are immersed in one class for two weeks. Many of these courses have an environmental theme, like fishing, boat building, gardening, and winter survival lessons. During one week each year, all content teachers work together to teach an interdisciplinary environmental unit—either about climate change or the Mississippi River—within and across their classes. For students, the purpose of all of these experiences is not only to gain a greater appreciation for the environment, but to also develop a strong sense of community, character, and leadership.

The school considers student-led environmental initiatives to be most effective. REA's GreenCorps leads students in initiating behavioral change at school through signage and student patrollers who encourage conservation. The outdoor

classroom is furnished with student-built contributions, including a chicken coop, Adirondack chairs, gardens, and a Journey North citizen science tulip test garden. Through the Friends of the Mississippi River, REA adopted and cleans a mile of riverbank.

Through a partnership with Outward Bound, students attend an annual, one-week 10- to 20-mile hiking trip. They also participate in a week of urban expeditions, biking, rock climbing, canoeing, and a walking scavenger hunt. Students participate in winter activities at Harriet Island Park like sledding, snowshoeing, and winter survival lessons.

At the beginning of the year, each Crew (homeroom class) selects a service project site that they serve once a month throughout the year. These projects include a variety of sites, such as Youth Farm, Conservation Corps of Minnesota and Iowa, Friends of the Mississippi River, and Dodge Nature Center. Students represent REA at the local farmers' market on the west side of St. Paul, where they sell homemade products (bread, lip balm, bug repellent), as well as produce from the student-led garden and from other service projects.

Gustavus Adolphus College, St. Peter, Minn.

Acting on the great challenges of our time

Environmental sustainability is essential to Gustavus Adolphus College (GAC)'s commitment to its core values of faith, community, justice, leadership, and excellence. Faith calls GAC to care for the environment that sustains the school's community. We are not just if clean air and water are not available for all, nor are we leaders if we lead in damaging the natural world and its life-sustaining functions. Excellence is only possible when we can live, as Wendell Berry says, "without destroying the sources of our life."

As a liberal arts institution, GAC's values guide it in the face of complex global environmental issues that require innovative and sophisticated solutions built on an understanding of science, social values, and economic realities. GAC was founded by Swedish Lutheran immigrants in 1862. While it maintains connections to that heritage, it has emerged as a liberal arts college dedicated to serving students from many backgrounds. Located in St. Peter, Minn., a community of about 12,000 people, the college overlooks the Minnesota River on land that historically was the border between the southwestern Minnesota prairie and central and southeastern Minnesota's the hardwood forests and savannah. With an enrollment of around 2,200 students, the college's vision is to equip "students to lead purposeful lives and

to act on the great challenges of our time through an innovative liberal arts education of recognized excellence." Although many of the Swedish founders of the college were farmers, and thus had an understanding of environmental stewardship, key features of the college's sustainability effort first emerged in the 1960s and 1970s.

The school's signature Nobel Conference on science was first held in 1965, and the second iteration was themed "The Control of the Environment." In the last decade, sustainability themes at the conference have been frequent, including energy (2007), water (2009), food (2010), and oceans (2012), with themes of soil (2018) and climate change (2019) planned in the immediate future.

As a result of these conferences, the college has sustained an environmental education and communication effort for on- and off-campus audiences. In the 1970s, the college dedicated a portion of land to form the Linnaeus Arboretum, which has become a venue for environmental reflection and learning for students, staff, and the public. With a fulltime naturalist on staff, the "Arb," as it is called, hosts programs for elementary school students and families, college students, and senior citizen audiences. In 2008, the 70-acre Coneflower Prairie restoration was added to the arboretum. While the Linnaeus Arboretum is an environmental education resource like the Nobel Conference, it also serves as a center for nature-based reflection and recreation in support of the college's well-being efforts.

The GAC effort to conserve material resources was jolted forward in 1998 when an F3 tornado severely damaged the campus and the surrounding community. The ensuing rebuilding and renovation effort was undertaken with a deliberate focus on energy and water conservation. That effort, plus subsequent energy conservation projects, allowed the college to hold electricity and natural gas consumption steady despite increased building square footage, and to reduce water consumption. As a part of maintaining that effort, the two most recent major construction projects on campus have resulted in LEED certification: Platinum for Beck Hall and Gold for Anderson Hall.

Although the contributions to campus energy load are modest, the college maintains one of the most extensive examples of working renewable energy technology on a college campus in Minnesota, including two solar electric arrays (one demonstrating three different inverter technologies), three large solar thermal arrays, and a small wind turbine.

The emphasis on energy and water conservation has, of course, been supported by an ongoing waste management and recycling program. In 2013, the college began an on-site composting effort for all pre- and post-consumer food waste from Dining Services, and is currently exploring ways to extend this effort to food waste generated in residence halls and other buildings. In 2017, the college began a shift

to single-sort recycling to improve the overall performance of the recycling program. The food waste composting, as well as the overall recycling effort, are part of wider intentions to link energy and material conservation to the College's educational mission. The composting effort, for example, is physically and programmatically linked to the student garden, Big Hill Farm, and an extended season green house.

Solar panel installation on a shed in the Big Hill Farm student garden

While GAC is located in a rural area, the college nonetheless has made efforts to encourage alternative transportation. The "Gus Bus" is a widely used shuttle that is paid for by the Student Senate, and operates on Wednesday, Friday, and Saturday nights. This bus brings students to and from downtown St. Peter businesses. Though it is aimed at improving student safety, it also reduces car use. GAC also has partnered with Land to Air Express. This company brings Gustavus students (at a discounted price) and other patrons to many different locations around southern Minnesota as well as the Minneapolis-St. Paul airport. This company has recently added a twice-a-day bus service between Mankato and Minneapolis, with stops on the Gustavus campus. In addition, Gusties on the Go is a free bike loaner program on campus that began in 2016.

The wider commitment of the Gustavus Dining Service is critical to many combined education and conservation efforts. The Dining Service operates under an a la carte model that reduces food waste and encourages better food choices. Besides whole-hearted support of the food waste composting program, the Dining Service operates a reusable take-out container program. More importantly, the Dining Service helps integrate the college's well-being efforts with the environmental sustainability efforts through the Dining Service advisory board, the Kitchen Cabinet. Meeting monthly, this body encourages conversations about the interaction between food, well-being, and the environment, and encourages actions that holistically address sustainability, well-being, and education.

The Environmental Health, Safety and Risk Management Office investigates and mitigates most indoor air complaints for the campus community. Chemical waste is disposed of through an approved vendor that can reuse the chemicals for fuel

blending processes or repurposing the chemical instead of disposal. GAC aims to respond to pest issues and complaints in several non-chemical ways, including using physical barriers, non-chemical traps, and removal of refuse.

Another environmental education emphasis for the college is the recognition that well-being and sustainability extend beyond the campus. Student-founded and led organizations like the Gustavus Greens and the Climate Justice Coalition often have driven these discussions. In other cases, these efforts are initiated by staff. Regardless of the origins, GAC students and staff have collaborated to create lasting institutional efforts such as GAC's official Fair Trade Campus designation. Another example is Forest Stewardship Council (FSC) certification in the college's mail and print operations, confirming a commitment to using paper from sustainable sources where possible.

The environmental studies program draws on faculty from nine different academic departments ranging from anthropology to physics, and graduates approximately 15 students per year. Many of these students choose to double-major in another academic department. Other areas of study that often make interdisciplinary connections with environmental sustainability are the gender, women, and sexuality studies program, the peace studies program, religion, geography, geology, biology, chemistry, physics, and communication studies. The latter major's Public Discourse class often involves students in environmental sustainability topics with relevance to the local community. Students also have the opportunity to participate in January term classes like Introduction to Renewable Energy, and take elective courses like Local Food Production, that teach them, through doing work in the Gustavus greenhouse, how to sustainably grow local food.

About half of Gustavus students study abroad, and several GAC signature study abroad programs focus on sustainability topics, including the semesters in India, Sweden, and Malaysia. Across the curriculum, the Community Based Service and Learning office supports the integration of civic engagement into classes through community based learning including efforts related to sustainability. A particularly strong effort related to sustainability has been the Religion and Ecology course, which engages students in learning about the environmental perspectives and activities of diverse faith communities.

A key overarching aspiration of the GAC sustainability effort is to engage and empower the whole learning community (faculty, staff and students) in sustainability efforts across the campus. While this work has been supported and encouraged by the Johnson Center for Environmental Innovation since 2007, various programs and individuals across the campus contribute to campus sustainability efforts. In 2017, Gustavus President Rebecca Bergman initiated the President's Environmental Sustainability Council (PESC) to coordinate these efforts and meet Goal Three of

the Gustavus Acts Strategic Plan which is "to achieve fiscal, institutional, and environmental sustainability." The PESC began meeting in the fall of 2017.

Missouri

Bellerive Elementary School, Creve Coeur, Mo.

Inspiring lifetime environmental leaders

The mission at Bellerive is to "Grow Capable Learners … Inspire Lifetime Leaders." As a recognized Leader In Me Lighthouse School, Bellerive has developed the school culture and community to lead green schools efforts in many ways. A Leader In Me school is a whole-school transformation process. The process teaches 21st-century leadership and life skills that help empower students to see that every child can be a leader. The school received Lighthouse status in May 2015. This special distinction has been awarded to only 350 schools worldwide. Bellerive is aware that its most effective method for reducing environmental impact, improving health, and delivering sustainability education has been through students discovering their strengths and using them to lead and serve the school and community.

Bellerive was an early implementer of a cafeteria composting program that includes the use of compostable serviceware. In addition to minimizing waste, the school also has been working diligently to minimize energy use. Bellerive has converted 100 percent of indoor and outdoor lighting to LED. The indoor lighting is all controlled with vacancy sensors, and outdoor lighting has motion-sensing controls that dim the lights when there are no vehicles or people on the school grounds. Using a centralized power management program has cut plug load. All HVAC and roofing improvements meet a minimum standard of ASHRAES's 50 percent Advanced Energy Design Guidelines for K-12 Schools. The presence of a 25 kilowatt solar array provides roughly five percent of the school's electricity needs. The results of all of these efforts have put Bellerive's ENERGY STAR score at 92. Bellerive's work to save water includes retrofitting all faucets with 0.5 gallon per minute aerators. All toilets have been retrofitted with dual flush valves as well. For the garden program, Bellerive chose to use an indoor tower garden which recirculates water rather than an outdoor garden that requires frequent watering. The school even has renovated parking lots with permeable pavement, which allows stormwater to be absorbed into the ground rather than running off into the region's stormwater sewers.

The past few years, Bellerive has worked to beautify the school grounds, and work is underway to create an outdoor oasis. There is an outdoor classroom in the

courtyard, which includes a community mural. Within the school grounds, there are now are perennial plants with sections for Missouri native plant species.

As Bellerive works to create balance, it supports students' need to lead healthy lifestyles. The curriculum includes information about healthy choices, exercising, and eating right. The presence of a garden bar allows students to eat fresh produce that helps fuel their day and their physical education activities. For several years, a yoga instructor has worked with teachers on how to embed mindfulness activities throughout the school day. Each classroom has a calming corner with sensory tools, fidgets, and more. Students are learning to regulate their emotions with strategies they will use for a lifetime.

Families participate in Bellerive Elementary School's Walk to School event

Bellerive provides resources to families for health services as well. In partnering with Give Kids A Smile, the school is able to provide free oral healthcare to students in need, to help develop early health habits, which are essential to lifelong healthy living.

The school further fosters healthy environments by using high-efficiency, high-quality MERV 8 filters to ensure the air inside the school is clean. Using no- and low-VOC paints and flooring materials keeps the air cleaner. Implementing green cleaning practices and IPM practices minimizes the exposure that students and staff may have to irritating chemicals.

Students learn best when learning comes to life, and they see real-world applications. Thus, Bellerive embraces teaching concepts and content through a cross curricular approach, and incorporates outdoor learning experiences when possible. The school allows for student choice and voice when it comes to subject areas, and how to make their learning come alive. Bellerive strives to make more connections to how to be a responsible citizen through conserving, recycling, and making responsible, sustainable choices that affect others.

Through grade level service projects, students learn about needs in the community and work to problem solve ways to support and address those needs. Each grade level organizes, plans, and implements a service project. Several of the service projects work to reduce waste and educate others about the importance of recycling and composting anything that can't be reused. The first grade collects shoes for Shoeman Water Projects, which help to provide shoes to those in less developed countries, while simultaneously funding the creation of clean water wells. Second

grade collects used books for a used book fair and donates the money to Ready Readers to help provide new books to students who may not have any. Third grade collects gently used items for donation and reuse by the International Institute. They help refugees who are just acclimating to the United States. Fourth grade has been collecting empty laundry detergent bottles to donate to New Hope so they can be refilled. Fifth grade has made thousands of bean soup packets to help provide a healthy and nourishing meal for those who are hungry. The goal is to teach students that we have a lot for which to be thankful, and can give back to others and save resources.

As a culminating project, Bellerive worked to collect and upcycle used school supplies at the end of the school year. The school community donated thousands of supplies to students in Zambia, who have less access to resources. The students peeled broken crayons to be melted down to make new crayons, pencils were sharpened, and used note pages were recycled to make notebooks like new. Kids learned they can help make a difference not only in the local community, but also in the world.

As a school that focuses on creating leaders out of students, Bellerive is proud of its current approach to demonstrate what is expected from students. By setting and achieving far-reaching goals for reducing environmental impact and improving the wellness, students have noted and regularly demonstrate their leadership potential to make a positive difference in the world, even when no one is watching.

Green Trails Elementary School, Chesterfield, Mo.

Asking the right questions leads to green answers

Building a culture of sustainability and health at Green Trails has been a journey. It began many years ago with a question: "Why do we leave lights on after students leave the building?" The school started by turning off lights and unplugging appliances and saved about $8,000 in a single year … and there was no turning back.

Since 2010, Green Trails has reduced energy use by 31 percent and greenhouse gas emissions by 31 percent. One energy project was to add a 25 kilowatt solar photovoltaic array on the roof, which generates a little over five percent of the school's energy use. There is a monitor in the front lobby of the school that actively displays the energy production levels throughout the day, and the data is also available on the school's website. Also, as Green Trails undertook building

upgrades, it opted for efficient construction practices, such as high-efficiency HVAC units, increased insulation, and LED lights.

After energy conservation, parents and staff became interested in a school garden, which has influenced both health and learning at the school. In 2014, the Green Trails community came together on a Sunday to build the Green Trails community garden. Participants installed raised beds with composted soil, deer fencing, mulch, a shed, and an educational information board. The school now has a demonstration compost station, a sandbox, a pollinator bed, a watering system, and an herb garden. Instead of chemicals, the student gardeners use a vinegar-water blend and weed barriers such as newspaper, cardboard, and fabric. In 2015, a separate perennial fruit and berry garden was installed, and Green Trails was recognized as a Certified National Wildlife Habitat.

Seed packets created through the Sowing Seeds project

Green Trails hosts three communitywide weekend events a year that include planting, weeding, repair/clean up, and winterization. Involvement in the gardens allows students to experience in a hands-on manner what healthy foods look like, where they come from, where food scraps go, and in turn what can grow from the compost. The garden as officially a success when, after harvesting and sampling Bok Choy, we received numerous parent phone calls asking what Bok Choy was and where could they buy it.

The garden is always open to visitors. The school has hosted local gardening experts leading home gardening sessions and invited the public. Families partner to learn, water, and weed in the summer months. Many families since have started their own chemical-free gardens and pollinator beds. Educating students and the community has helped create a culture that places a greater value on locally sourced produce and healthier eating.

Healthy living is the way Green Trails operates. The elimination of birthday cupcakes and cookies was met with joyful screeches from students when they learned they can go outside instead. When administrators raised the idea of doubling recess time outside, teachers were worried there would not be enough time to complete the academic content requirements of the school day. They quickly

discovered it was easier to teach with more focused and happier children. Plus, the school experienced an overall decrease in office referrals by almost 19 percent as a result of the change.

Green Trails has been working with the school district's Nutrition Services Department to use the school's fresh produce in school lunches. Examples include serving sweet potatoes from the garden as baked fries or homegrown kale in vegetable smoothies. Students have participated in tasting and cooking demonstrations such as making pesto. Displaying whole foods has helped students understand what a real pear, eggplant, or sweet potato looks like. Student-picked produce is provided free of charge to all in the cafeteria.

After studying compost, a group of school leaders requested a demonstration vermiculture / worm composting bin. They monitor and adjust moisture levels and add food scraps to keep the worms healthy. The long-term plan is to relocate the worms outside and put them in the vegetable beds to enhance the soil further, thereby providing a systems thinking opportunity for students.

Through their Sowing Seeds project, students harvest, package, illustrate with their own artwork, and research and write planting instructions for each seed packet. These packets will be given to older adults through a "Grandfriends" partnership with a senior center and local church, and also sold to community partners to ensure pollinator gardens are being grown throughout the community. Who would have thought young children could teach older adults? Another example is a service project for which students photographed themselves performing exercises, wrote out the exercise steps on cards, and gave the seniors the cards on handy rings after demonstrating the exercises in person. The children are teaching others about what they have learned about healthy living!

Another way GreenTrails students take reducing the school's footprint seriously was highlighted when the school partnered with 10,000 Pencils, an upcycling school supply project. Student leaders facilitated a school supply drive where hundreds of pounds of used crayons, pencils books, paper, notebooks, and other items were donated to students in an urban St. Louis school district and a Zambian school. This has brought a global connection to students about both saving resources and helping others in need.

Green Trails is truly committed to Whole School Sustainability. The school community actively seeks to educate students and the community about reducing environmental impact, healthy living, and helping others. This has led to genuine environmental leadership by students. The concept of closing the loop and systems thinking then has been applied to many other projects such as reducing energy use, renewable energy, recycling, composting, health, wellness, and indoor

environmental quality. Green Trails is proud to have been able to transform a school culture and created a movement all stemming from turning off lights and planting a garden.

W.W. Keysor Elementary School, Kirkwood, Mo.

Cultivating students who feel connected to our planet and its inhabitants

W.W. Keysor Elementary has fostered an educational community where elementary students develop their passions, learn about the world around them, and have a positive influence on society. Keysor's sustainability goal is to cultivate students who are stewards of their environment, and who actively realize a sense of responsibility and feel connected to the planet and its inhabitants. The goal is supported by both the school mission, "The Keysor community works together to support all learners on their journeys as empathetic, creative and critical thinkers who actively impact our world," and the school vision's four themes of focus, "Character, Achievement, Community and Impact."

Keysor's annual participation in the Green Schools Quest continues to engage students, faculty, staff, and community members in projects on energy reduction (2013), rain studies and capture (2014), sustainable gardening (2015), and waste reduction and diversion (2016). These efforts have contributed to a 30 percent reduction in energy use over the past three years.

Beginning in 2012, Keysor undertook a concerted effort to reduce lunch waste sent to landfills. Students collected data and discovered that 2,340 bags of trash were sent each school year. Compostable trays were introduced, and students began sorting cafeteria waste into separate bins: recycling, composting, and landfill. Trash was reduced from thirteen bags to two bags a day, an 85 percent reduction.

Energy consumption has been a focus for reduction during the 2017-2018 school year, as Green Schools Quest work has educated the Keysor community in practices regarding resource conservation through use of daylighting, unplugging electronics, and conserving energy production from HVAC systems. Educational videos, with student role models, and mini-informational posters have been developed and shared with 540 students and 45 staff members this school year, leading to a 10 percent per student per year reduction in energy use.

Sustainability efforts extend beyond daily building operations. By harvesting rainwater, over 100 gallons of collected water are used within Keysor's garden spaces. With over half of greenspace on campus dedicated to actively stewarded

water-efficient and regionally appropriate landscape plantings, an increase in animal and insect species has been recorded.

Keysor students tag Monarch butterflies in the rain garden

Health and wellness are a mainstay at Keysor. Nutritional education and opportunities have also deepened staff and students' understandings, as all are able to nurture, cultivate and enjoy produce of immediate creation. Through the implementation of three tower gardens and garden lab spaces, Keysor students have been afforded opportunities in healthy eating, with over 10 varieties of vegetables and fruits produced on site. Educating students, families, and community about emissions led to adoption of a No-Idling Policy. Further modeling of bike safety, walking to school options, and Fitness Fridays also have fostered an environment of ecologically beneficial actions.

Innovative practices in well-being have been fostered across the Keysor community through the creation of a health and wellness classroom, as well as full-time counseling support. Keysor's additional creation of a behavior specialist position has enabled students and staff to receive guidance and assistance, as needed, further strengthening Keysor's focus on emotional well-being for individuals, each other, and the environment. A large learning milestone was the creation of and outdoor learning landscape known as Project IDEA (Imagination, Discovery, Exploration, Adventure). Project IDEA promotes learning both inside and outside the classroom. The area fosters efforts to reduce environmental impact, improve the health and well-being of the community, and provide environmental and sustainability education to all members of the Keysor community.

The community's stewardship of renewable resources is demonstrated at several key areas in the Project IDEA space. Specifically, two exploration houses, known as Hoffarth House and Riggs Diggs, include rain barrels to collect water for the gardens, solar panels to power the rain barrel water pump and security lights, and a green, living roof. By observing this practical demonstration of renewable resources in the Project IDEA space outside, the Keysor community is inspired to review practices inside, like using natural light and unplugging devices when not in use.

The ecological habitats within Project IDEA create a sense of connectedness to the world. Students view the native wildlife in the Lori Whiting Bird Sanctuary, tag Monarch butterflies in the certified Monarch Waystations, and conserve native habitats by managing a student-planted, seed-stomped prairie. Students also learn the importance of filtering rainwater runoff while caring for the five rain gardens. Together, students and staff embrace the cycle of plant growth through produce cultivated for consumption. Keysor students are provided with a setting that is always evolving and meets curriculum standards across grade levels. Each habitat within this less-than-an-acre setting provides real-world examples of habitat preservation, landscape maintenance, nutritional well-being, social engagement, and creativity.

The Keysor family deeply respects the Earth and its resources. By listening to children's voices, families' passions, and educators' interests, Keysor has made gains to positively influence the world. These respectful insights have created dynamic changes for the school and students, and have fostered a caring community which embraces and extends practices into homes and neighborhoods.

Keysor is committed to reducing environmental impact, improving the health and wellness of students and staff, and providing effective environmental and sustainability education. The school community and the Kirkwood community embrace these commitments. Keysor engages the community in its work, gives back through civic engagements, and encourages students to become agents of positive change in the broader community.

St. Louis University High School, St. Louis, Mo.

Commitment to global justice, local justice, and sustainability

On the occasion of its bicentennial, St Louis University High School (SLUHS) is a vibrant and successful institution because it is rooted in a mission that names and holds its community accountable to universal human values. Sustainability, in both its broader human and cultural sense, as well as its more specifically environmental meaning, is a fundamental part of that mission. The school's formal mission statement considers SLUHS' location in the city of St. Louis, and its commitment to global and local justice—including providing economically disadvantaged students a program of study that connects academic knowledge to moral responsibility and a desire to form compassionate young men – as a commitment to sustainability.

In his encyclical 'Laudato Si' – Our Common Home, Pope Francis says: "Let us be protectors of creation, protectors of God's plan inscribed in nature, protectors of one

another and of the environment." This document guides and informs all of SLUHS' sustainability efforts. The school's progress has been led by a newly formed, vertically integrated sustainability board, consisting of members of the school administration, corporate leadership team, finance office, maintenance and faculty leadership, science faculty, student sustainability club and garden director.

In terms of environmental impact, SLUHS is in the final stages of bringing its ENERGY STAR Portfolio Manager monitoring online. The school has transitioned almost entirely to LED lighting. SLUHS has added occupancy sensors and faucet aerators to save electricity and water, has done extensive replacement of reflective roofing, and added insulation to increase efficiency and reduce energy use for cooling. Students documented a seven percent energy savings due to these efforts. As a result of reducing waste, a contractor offered SLUHS a significantly reduced monthly service rate. In the area surrounding the school, over 40 houses were dismantled and recycled and existing streets and alleys were developed into a large green space available to the entire neighborhood. Stormwater runoff now percolates into the soil on the western side of the field-house. SLUHS also has nearly doubled the amount of landscaped area featuring native, drought resistant and low maintenance plantings.

SLUHS' AP Environmental Science class launches a weather balloon

In terms of health and wellness, SLUHS has made progress in protecting students and faculty from airborne chemicals in labs and storage facilities. The school also catalogues a number of innovative curricular, co-curricular and faculty/staff programs on offer, in order to teach health and wellness content to students through physical education classes such as yoga, and to support and encourage personal health and wellness habits among faculty and students through all-school assemblies and free health screenings and enrichment activities.

Finally, SLUHS documents its commitment to education through the important work the school is doing in institutional and departmental curriculum review and formal recognition of sustainable goals. Last summer SLUHS ran a curriculum institute in sustainability for faculty to design and launch new cross-curricular initiatives. One

result was a new required human geography course in social studies, centered on sustainability themes and deepening cross-curricular coordination with freshman biology.

Our ongoing educational efforts include offering AP Environmental Science for over 10 years, with 12 percent of graduating students participating, and all scoring a three or above. In addition, many subject assignments explicitly incorporate environmental and sustainability themes like mountain top removal, invasive species, coral bleaching, and alternative energy development.

Above all, SLUHS believes that its conscious and value-driven decision to remain in an urban location, during years in which many economic and social forces were pushing the school to move west, best demonstrates a commitment to sustainability. Many schools like SLUHS across the country chose to relocate as population centers shifted. SLUHS remained in its location adjacent to St. Louis' Forest Park, with its many biological and cultural resources, and an economic and cultural corridor that now includes a science center, a vibrant middle school, a new industrial and residential development, Barnes Jewish and Children's Hospitals, and the Grove Entertainment District. SLUHS benefits from the partnerships and opportunities provided by this inner city location and shares some of the credit for the vibrant renewal now evident in this corner of the city of St. Louis.

Montana

Superior School District, Superior, Mont.

Living sustainably in the last best place

Superior Schools are located in beautiful western Montana, nestled between the mountains and Clark Fork River. Always mindful of surroundings, Superior School District has made many sustainable changes in the recent past to further enhance and protect its natural location and resources. The district has 273 students, with 100 percent eligible for free and reduced lunch, and close to a 96 percent graduation rate.

Sustainable playground materials, solar energy, updated recycling, and smarter water fountain and vending options have been critical to reducing the schools' environmental impact, lowering costs, and improving student health and wellness. Recycled shredded tires are now the cushion under the playground equipment at the elementary school. Hundreds of tires were used to make this 'mulch', keeping them out of the landfill and causing unnecessary waste. Solar panels have been placed

on both the elementary and high school buildings in conjunction with Northwestern Energy to increase efficiency and decrease energy dependence on outside entities.

Another key initiative to student health and sustainability has been a focus on integrating food sustainability education into the district, giving students a better understanding of well-rounded diets. Superior participates in the "Harvest of the Month" program, which focuses on adding various fruits or veggies to the month's menu, for example adding lentils to chili, shredded carrots to cupcakes, serving a kale and apple salad, and providing a salad bar every day. The school has stocked the vending machines with healthy options, and no soda is available. Students instead are able to purchase juice and water as well as whole grain snacks. In 2017, Superior hosted a camp dedicated entirely to teaching students about the lost culinary art of preserving. Students pressure canned fruits and vegetables, various jams and jellies, and several varieties of pickles and fillings using reusable glass jars. The course also covered herb drying, the making of jerky, and water bath preserving methods.

Complementary to a focus on dietary education has been the inclusion of physical wellness programs that engage students in active lifestyle maintenance. Increased recess time in the elementary helps aid in additional physical activity for students. A walking path around the playground perimeter is available for those students who need less strenuous activity, and a walking club each spring prepares students for the annual "Fun Run," a five-kilometer walk/run hosted by rotating schools in Mineral County. Staff is encouraged to participate in adult education classes offered, such as volleyball, basketball, yoga, and weight lifting.

Finally, living in the "last best place," the whole district feels a responsibility to educate future citizens in the responsible conservation of the state's vast natural resources and environment. Superior works with partners to turn the beautiful outdoors into a classroom where students learn about growing their own food, composting, and forestry and conservation practices. The Superior Ranger District is a huge part of the curriculum, providing environmentally based education throughout the year for all classes, complete with the local Smokey the Bear character, to enforce the importance of responsible forest use, fire safety, and trail/land use. These lessons, along with integrated community service, have played a big role in school and after-school programs. Superior has created a school

garden and outdoor classroom, which is open to the entire district, both staff and students. This area is used for science experiments such as erosion and light refraction, as well as growing plants, herbs and flowers. Each classroom has its own raised bed and several have already started growing items such as winter garlic and flower bulbs. Students then track the plants' growth using charts, graphs, and projection plans. As the school expands garden plans, recycled bathtubs will become planters, and, waste cardboard will be turned into walkways throughout the garden area. A worm farm for additional compost material is in the works as well.

2018 will mark the 50th consecutive year that the U.S. Forest Service and Superior Schools have partnered to take the sixth grade class to the U.S. Forest Service Savenac Tree Nursery for a week of education, experiments and intense hands-on learning. This is often the first time some children have ever touched a fishing pole or been exposed to life without cell phones or video games. Pond study, ecology compass training, orienteering, insect studies are just a tiny portion of their week. Tree measuring, fungus investigation, bow-and-arrow safety and shooting, and responsible ATV use are just a few of the other offerings throughout the week. One day is dedicated to the Idaho part of local history by hiking the Pulaski Trail outside of Wallace, touring the Idaho Silver Mine and stopping by a fish hatchery on the journey home, followed by an evening of astronomy.

Superior, while a tiny school in one of the most rural places in Montana, is making a concerted effort to make a big positive influence not only on students, but in the community.

New Jersey

Highland Regional High School, Blackwood, N.J.

Communitywide ecological stewardship

The Highland Regional High School community is committed to improving the efficiency of its facility, built in 1967, providing environmental leadership and demonstrating ecological stewardship through the green team, which consists of students, teachers, administrators, and community members. By identifying actions for reducing waste and carbon footprint, the green team has been a catalyst for changing behaviors resulting in sustainable use of resources and reduced greenhouse gas emissions.

Over the past five years, Highland has achieved more than 12 percent reduction in energy costs, and a 24 percent reduction in greenhouse gas emissions through the

installation of high-efficiency lighting, new refrigeration, heating, air conditioning units and boilers, use of the ENERGY STAR Portfolio Manager, and participation in EnerNOC's (Energy Network Operations Center) demand response program, thereby reducing electrical power during heat waves. Highland has created a "green equipment account" in the maintenance budget for purchasing green and energy savings supplies.

By implementing responsible irrigation methods, Highland reduced total water usage by 15 percent. In addition, the school implemented composting by partnering with Organic Diversions, a company that coaches students and staff with strategies for collection and quantifying composting efforts. The grounds include two large, undisturbed rain gardens with a connecting 450-foot bioswale for stormwater management and protection of the water quality. The three courtyards are sub-irrigated by roof scuppers and downspouts channeled into a perforated pipe system sustaining the courtyard gardens without mechanical irrigation. The gardens are home to more than 48 native wetland species of wild flowers, shrubs, trees and meadow grasses that help water and soil conservation. In consultation with Rutgers University turf management experts, Highland developed a deep root system by greatly reducing the use of nitrogen, therefore preventing the leaching of chemicals that reduced use of fertilizer by 75 percent.

Hands-on learning opportunities in the Highland greenhouse and courtyard

To improve the health of students and staff, drinking fountains have been outfitted with water bottle refilling stations, and reusable bottles are sold at the school store. In efforts to improve air quality, Highland discontinued using chemicals to strip flooring, and installed MERV8 filters in the HVAC systems. The school's wellness coordinator helps staff set healthy goals, sets workout regimes, organizes biometric screenings, and conducts health risk assessments. Faculty members participate in an eight-week mindfulness program, a "Biggest Loser" contest, and healthy eating preparation workshops. Students are invited to attend a weekly mindfulness class during their lunch, and outdoor seating areas are provided for "Tartan Time" to eat, work, or socialize. To encourage sustainable, healthy eating options, Highland is part of a program called DOD Direct Delivery Produce, which sources produce from local farms. In addition, dairy products come from Cream-O-Land, a local company.

The greenhouse and courtyard provide hands-on learning opportunities for horticulture and AP Environmental Studies classes. Green team students helped with global environmental issues by participating in a Thirst Project, which raised money to establish fresh water wells in historically malnourished areas of Africa. Throughout the year, students complete research and prepare presentations to participate in the annual two-day Envirothon, which is focused on complex environmental issues related to New Jersey's natural resources including soils, aquatics, forestry, and wildlife. In addition, AP students collaborated with computer-aided design, math, and English classes on a sustainability project for a vacant lot in Gloucester Township, and presented their plan to the mayor. In chemistry, students study the Bhopal disaster and new battery technology for electronics and hybrid cars. Horticulture students learn to propagate lemon geranium from cuttings for use as a natural pesticide. In nutrition and culinary and hospitality classes, students discuss organic versus non-organic foods, and marine studies explore human effect on the ocean's resources.

Highland is excited about the progress experienced in recent years, and takes pride in the community's ability to effect change within the school, influence the local community, and make a difference in the preservation of the global environment.

North Brunswick Township High School, North Brunswick, N.J.

Addressing community issues through partnerships and proactive activism

North Brunswick Township High School (NBTHS) is a suburban school serving 1830 students, more than 41 percent of whom are receiving free and reduced price lunch. The school has developed a culture of green awareness, incorporating all aspects of sustainability.

Over the past 25 years, NBTHS has been striving toward reducing carbon footprint through several energy audits. The school has made great strides in recent years with the addition of an energy manager, who implemented energy conservation practices, lowering energy costs. The school lowers heat settings during the school day as the school fills with warm bodies, reduces lighting during evening and weekend hours, uses window blinds to lessen heat loss in the winter, and increases solar heat gain in the summer. The district replaced T12 lighting with energy-efficient T8 lighting, and NBTHS is taking the additional step of switching to T5 and LED lighting. All new construction and renovations since 2000 have included the installation of occupancy sensors. Further, the school's computers are programmed for an automatic shutdown at 6:00 p.m., and again at 1:00 a.m. to ensure maximum energy savings. Replaced and retrofitted HVAC system controllers and a pool

heater that recovers heat during the dehumidification process provide temperature and humidity control. In addition, domestic hot water for restrooms is provided by a high-efficiency condensing style hot water heater, and low-flow restroom fixtures were installed to reduce water consumption.

Preparing plants for the outdoor raised beds

In efforts to reduce waste, NBTHS has installed four water bottle refilling stations throughout the building, thereby reducing single-use water bottles. Funds came from a grant provided by Sustainable Jersey for Schools and a partnership with community basketball, baseball and softball organizations. Student groups monitor and collect single-use bottles from recycling containers in the lunchroom and throughout campus. The school also has reduced printing needs by more than 10,000 sheets of paper through the integration of digital resources including Google Apps for Education, Chromebooks, online publication of the school newspaper, an online parent portal for announcements and report cards, and initiating a Bring Your Own Device policy. The school also now uses CloudReady, which employs web applications and cloud storage instead of traditional software and local storage, to convert and revive 300 legacy computers that otherwise would have been trashed. Electronics at the end of their useful life are upcycled, with the goal of repair, refurbishment, or redistribution.

The school has partnered with the town's parks and recreation department for maintenance of the on-site butterfly garden. Through a partnership with Rutgers University's master gardeners, students from NBTHS' Autistic Program constructed three raised gardens, which are used for learning life skills and learning to care for land in a way that positively affects the environment. Further, the environmental club has facilitated a pilot program, collecting lunch waste for composting. The product of the composting will be used in the raised beds in the spring.

In NBTHS' makerspace, students participate in a furniture challenge and create designs using recycled materials. In the Project Lead the Way Principles of Engineering class, student projects explore renewable and non-renewable energy sources including solar and hydrogen fuel cells, as well as recyclable plastics for a robot challenge created with a 3-D printer. Students in environmental classes choose a topic with pending legislation involving environmental science and contact

the sponsor/legislator to ask questions, assess authentic research and develop ways in which they can contribute positively to remediation of the problem as it pertains to their own neighborhood. Culminating activities include an explanation on how each party is involved, including the community, scientists, government, environmental groups and local businesses.

The school has partnered with Robert Wood Johnson University Hospital's Safety Ambassador Program, which provides NBTHS students with education on a number of topics, such as accident prevention, pedestrian safety, bike safety, safety in and around cars, and fall prevention. The participating students then provide the lessons learned to the district's first and second graders through outreach visits. Saint Peter's Hospital continues supports NBTHS' efforts to educate staff and students about vaping and the dangers associated with vaping. The Center for Empowerment has provided sessions about substance abuse and addiction services, as well as educational forums about healthy relationships. Guidance counselors provide a variety of services for families; including but not limited to mental health, physical health, individual, and family counseling; and financial support systems. School nurses provide families with information about asthma and life threatening allergies. Further, NBTHS has initiated a coordinated concussion management team to better manage the academic adjustments that students require when recovering from concussions. The administration, physical education supervisor and school nurse are actively involved in planning modifications to the physical education program to prevent injuries.

During the August health fair and September back to school night, NBTHS provided computer access to assist families with free and reduced lunch program registration. When weather permits, 75 percent of physical education courses occur outdoors in multiple facilities including the track, turf stadium field, turf soccer field, natural grass softball and baseball fields. Well-defined programs provide a systematic progression of cognitive, affective, and psychomotor experiences as students pass through various developmental stages. The school hosts a multitude of outdoor activities to achieve these goals, including but not limited to, flag football, soccer, ultimate Frisbee, jogging, sprint relays, mid-distance relays, tennis, and softball.

Last year, students focused on the controversial proposed Penn East Pipeline, which would run through Princeton and Hopewell Townships, neighboring communities that share a congressional district with North Brunswick Township. Students contacted congressional and legislative representatives to voice support or concern for pending environmental projects. The staff of NBTHS supports not only the academic understanding of content, but the real-life application of communicating global awareness and citizenship.

Students recently investigated the waste management practices and protocols established by local waste management companies, and identified ways to mitigate the production of waste in the household environment. Students identified the recycling efforts of each community, household and individuals through surveys and questionnaires, and identified areas of improvement. Students' findings strengthened the recycling efforts of the community through their recommended solutions to reduce the use of plastic products. In chemistry, students studied the effect on the environment, specifically toxicity to soil, and water, by discarded plastics, batteries and electronic equipment. Students also studied an outdoor observation area and identified all the biotic/abiotic factors they see with ecological relationships. The lesson incorporated how proper waste management positively influenced the health of natural environments. Students designed a plan that included parents and younger siblings focusing on activities and practices to keep the environment clean.

New York

Park Avenue Elementary School, Warwick, N.Y.

Planting the seeds for sustainable and healthy lifestyles

Park Avenue Elementary School is nestled in a charming rural landscape located approximately 55 miles north of New York City. The school, which has 480 students in kindergarten through fourth grade, is part of the Warwick Valley Central School District. It is characterized by a culture of environmental awareness and sustainability — a culture that begins on the very first day of kindergarten and carries through to pupils' post-graduation lives.

To this end, Park Avenue Elementary School has engaged in many successful initiatives to reduce environmental impact and costs. For example, the school uses the ENERGY STAR Portfolio Manager and dashboard, an online tool that allows school officials to measure and track energy and water consumption and greenhouse gas emissions to ensure all classrooms and other building areas are energy efficient. Also, every room is monitored through a virtual private network, allowing heating, cooling, and lighting to be adjusted from remote locations to save energy and maximize efficiency.

The school has a student-led green team that meets regularly with administrators to put forth ideas for new environmental projects. This team has advocated for a clothing collection bin to be located on school grounds, and for improved recycling bins to be added to the cafeteria, which has meant tons of recyclable materials are

diverted away from landfills. Food scraps also are diverted, as the school maintains a composting program. Through this effort, garden areas and greenhouse plants throughout the district benefit from a rich, natural source of nutrients.

Park Avenue pupils are enthusiastic participants in an annual "treecycle" project to celebrate Earth Day. In this communitywide event, students and other participants collect a variety of recycled materials (cans, milk jugs, cardboard, et cetera) to use as the basis for tree sculptures. The beauty is in the creative arts…and the increased awareness of recycling. Students embrace a similar theme when converting recycled shirts into tote bags; the funds raised from selling these bags are then used to purchase plants or supplies for green team projects.

Park Avenue kindergarten students the lookout for signs of spring

In the quest to further reduce environmental impact, Park Avenue students participate in the TerraCycle program, in which they collect plastic barrels and tops from markers, pens, and pencils to be recycled into new products. They also collect aluminum pull tabs from drink cans and recycle them for funds that are donated to a local Ronald McDonald House.

Additionally, Park Avenue Elementary School is an integral part of districtwide efforts to decrease environmental footprint; this includes adoption of a broad-reaching sustainability policy, replacing all fluorescent light bulbs with energy-conserving LED bulbs, and reconfiguring transportation routes to reduce bus runs by 30 percent. The school benefits further from the district's installation of a 10-acre, 9,000-panel solar array, which is the largest school district-owned solar project in New York. The array will generate approximately 2.92 million kilowatt-hours of electricity each year — enough to offset all electricity costs throughout the district. The learning opportunities with this green technology are limitless. Park Avenue students will start taking measurements of the solar array's power output, studying the science behind the technology, and discussing the broader implications of choosing green energy options in the upcoming months.

Other environmental education-related initiatives at Park Avenue include teachers' use of Engineering is Elementary curriculum units on sustainability, which include fun and engaging project-based learning activities for pupils. Students are even exposed to environmental education as they move through the hallways, as

recycling videos are played on a television located in the main lobby. They are able to take their learning outside thanks to the creation of an outdoor classroom that is designed to accommodate a variety of activities, from art projects to science experiments. Educators and families are part of the environmental learning process, too. The Children's Environmental Literacy Foundation provides training to teachers and school leaders on integrating environmental and sustainability themes in all curricular areas. With guidance from school staff, Park Avenue students create instructional materials to encourage family recycling efforts at home and in the community. This latter project was coordinated through Sustainable Warwick, a community organization that also conducts a variety of "green" assemblies for students, and partners with Park Avenue on tree-planting in a local park, community clean-up days, and Earth Day events in the town of Warwick. During last year's Earth Day celebration, every single Park Avenue class developed educational activities for the event; and students produced a video to showcase the activities, and even wrote and performed a commemorative song.

An array of health- and wellness-related programs complements and supports Park Avenue Elementary School's commitment to sustainable practices. The school cafeteria purchases fresh produce from local farms, and is participating in a state pilot program that integrates more locally sourced organic produce into school meals. The school also uses vegetables grown on district property and stocks only healthy snacks in vending machines. Along these same lines, classroom celebrations no longer include sugar- and fat-laden foods, such as cupcakes and candy. The school has installed water bottle refilling stations, so students can stay hydrated while also cutting down on the purchase of one-time-use plastic water bottles.

School maintenance personnel also focus on healthy educational settings by closely following green procurement policies for custodial and cleaning products. The school buys products through a cooperative purchasing process that ensures adherence to the requirements of New York's Green Clean program.

In addition, Park Avenue has a full-time school nurse and an active wellness and child nutrition committee. Students' social and emotional needs are supported through the services of a school counselor and daily access to either a psychologist or social worker. The school integrates a character education curriculum at each grade level, and has fully implemented Positive Behavioral Interventions and Supports activities; the latter program focuses on recognizing students for positive behaviors rather than punishing them for negative actions. To improve physical health, Park Avenue encourages nature walks and outdoor physical education activities. For "Screen-Free Week," students are given ideas about replacing screen time with more active pursuits, such as community hikes and reading and movement activities organized by local organizations.

The school even has found a way to blend physical activity and learning with the creation of a kinesthetic learning lab, which is based on research showing a strong link between movement and academic performance. Pupils in the lab can be moving through an obstacle course, tossing bean bags, or exercising on a stair stepper while they're reviewing spelling words, solving math problems, or engaging in other learning activities.

The many green initiatives the school has implemented have resulted in reduced environmental impact and costs, effective environmental education, and improved health and wellness for students and staff, as well as the greater community. At Park Avenue Elementary School, the seeds are planted every single day for sustainable and healthy lifestyles.

Warwick Valley High School, Warwick, N.Y.

Environmental stewardship and wellness as essential parts of the school ecosystem

From educational activities in classrooms to environmental experiences throughout the region, Warwick Valley High School's 1,335 students and 121 staff members fully embrace the philosophies of green living.

This has led to the school being recognized nationally for its commitment to sustainable practices. In 2017, Warwick Valley High School was awarded a $4,443 grant from the National Environmental Education Foundation to fund its proposed EcoEd Project. With the funding, students in AP Environmental Science classes and other elective courses were able to work with wildlife biologists at the Wallkill River National Wildlife Refuge to conduct original research on invasive species. They took multiple trips to the refuge, used handheld GPS equipment and other technologies to conduct land surveys, and ultimately wrote up and reported their findings to the scientific community.

Warwick Valley High School students have also benefitted from environmental education activities made possible by a $91,000 EPA grant made to the school district. The award allowed educators to expand a partnership with Sustainable Warwick, a local organization committed to protecting the environment and reducing carbon emissions. As a result, environmental education units were incorporated into all academic areas of the school. In addition, Warwick Valley High School students worked with Sustainable Warwick staff to create and present community workshops on a variety of environmental and sustainability topics, in effect expanding environmental awareness into the larger community.

Warwick Valley students have been recording data from the from the Wawayanda Creek for over 10 years

These grant-funded initiatives complement the school's broad range of classes that incorporate sustainability themes. This includes such courses as Conservation, Wildlife, and Land Management; Landscape Design; Floral Design; and Land, Food, and People. Warwick Valley High School students learn about green building techniques in the school's Project Lead the Way classes, and also take advantage of field trips to further build their knowledge base. Some 35 trips are scheduled each year and most have an environmental focus. For example, students visited Wheelebrator Westchester, an energy-from-waste facility, to learn how household waste is converted into fuel to generate clean, renewable electricity. They also toured an environmental research facility that focuses on LED technology, robotic lighting, aeroponics, and greenhouse disease research. Pupils are using their newly garnered knowledge to improve lighting in the school's greenhouse, which will, in turn, improve crop yields. This greenhouse — which soon will double in size to 1,200 square feet — provides produce for the school cafeteria, and serves as a hands-on classroom for pupils enrolled in agriculture classes.

Many Warwick students also choose to participate in extracurricular activities that enhance environmental knowledge gained in the classroom. The school has an active Future Farmers of America group, as well as an environmental club and a green team. The school's Envirothon team advanced to state-level competition in 2017; this event tests student teams on their knowledge of environmental topics and their ability to make effective oral presentations in problem-solving scenarios.

Warwick Valley High School staff members are learning right along with students. The school partners with Hospitality Green, which allows custodial staff to better understand their role in supporting sustainability. Teachers receive training and guidance from Sustainable Warwick and the Children's Environmental Literacy Foundation on integrating sustainability and environmental topics into all content areas. Many teachers also look for opportunities outside of school to further expand their knowledge base. For example, a science teacher joined an Earthwatch research team in the Sierra Nevada Mountains of California to help scientists understand how climate change affects the health of meadows. The research project was a valuable learning experience, as the teacher, in turn, integrated the research findings into science lessons for students.

Warwick Valley High School students need only to look around their school setting to gain an even greater understanding of how to address sustainability and environmental issues effectively in a larger, real-world context. With all of its successes in reducing environmental impact and costs, the school itself is a perfect model.

For instance, Warwick Valley High School has made recycling and other green initiatives a front-and-center priority. The student-led green team designed reusable water bottles to replace those typically used once and thrown away; these bottles were sold to students and staff. Also, additional trash and recycling bins have been strategically located throughout school facilities to encourage recycling. Students added the "cool factor" to recycling by creating the Recyc-KOOL campaign, in which they use stickers to identify items in the cafeteria that can be recycled. The high school cafeteria also has an eco-digester that processes all food waste (including food scraps from all four district schools); the resulting water is safe for sewers. These recycling and reuse efforts have led to a 19 percent reduction in the amount of trash going to landfills from the high school over the last two years.

Warwick Valley High School has improved energy efficiency through enhanced monitoring of energy usage, by installing LED lighting, and by using software that automatically powers down computers when they're not in use. Efficiencies also are evident in the way high school students are transported to and from school, as the district has purchased 10 propane-powered buses. These vehicles run cleaner than traditional diesel buses and have almost no emissions. In addition, propane is approximately half the cost of diesel and the propane buses require less maintenance, yielding an estimated 30 percent savings in maintenance costs.

Even seemingly small opportunities for positive influence are not overlooked at Warwick Valley High School. The parking lot has speed bumps that divert water away from vehicles and buildings and into a rain garden on the school property and to the local Wawayanda Creek. All landscaping is regionally appropriate, and plants and shrubs have been chosen for their ability to thrive without the need for excessive watering.

Educators and school leaders also continually seek out ways to maintain a healthy, positive, and compassionate school climate. To this end, Warwick Valley High School has a full-time registered nurse in the health office, along with six school counselors, a full-time school psychologist, and a social worker to provide support and guidance to students. In addition, the school has partnered with the Orange County Department of Mental Health to establish a satellite clinic that offers counseling and intervention services, and with the Warwick Valley Prevention Council, which provides pupils with information on healthy behaviors. To increase overall safety, the school has added a school resource officer.

Maintaining and improving students' physical health is another vital element in the school environment. The meals prepared at Warwick Valley High School include organic produce sourced from local farmers, as well as from the school's greenhouse. With these fresh produce options, the school's menu often exceeds the USDA meal pattern requirements for providing fresh fruits and vegetables.

Students are encouraged to take advantage of endless opportunities to increase physical activity levels. More than 30 athletic teams currently represent Warwick Valley High School, and students participate in at least 90 minutes of physical education classes each week, with many activities taking place outdoors. The high school offers a ropes course, a rock-climbing wall, and such outdoor education activities as orienteering. Plus, Warwick Valley High School is preparing to install an outdoor challenge course, which will allow students, staff, and families to participate in a fun and interactive obstacle course that will further promote physical fitness. The outdoor courtyard and nature trails are popular choices for outdoor time for students.

Taken together, Warwick Valley High School's far-reaching and comprehensive sustainability initiatives are yielding significant positive results in the areas of environmental education, improved pupil health and wellness, and reduced environmental impact. Environmental stewardship and wellness have, in effect, become integral parts of the school's ecosystem.

Ohio

Magnificat High School, Rocky River, Ohio

Mother Earth helps instill care for God's creation

Ever since Magnificat High School (MHS) opened in 1955 with a freshman class of 63 students and three Sisters of the Humility of Mary, the school has reflected the Humility of Mary Community (HMs) charism of humility (humus) connecting MHS with "the whole earth community," and the justice theme of Care for God's Creation. The 19-acre campus is thoughtfully developed to maximize this mirror of the HMs beliefs, and is reflected in all that Magnificat's students, staff, and faculty do.

Magnificat has participated in a Demand Response Program through its energy provider since 2013, earning annual rebates. The school's most recent renovation included the installation of occupancy sensors, light tunnels, and sustainable furniture, paneling, and flooring. In 2014, the Maginificat hoop house was installed

with ridge wall vent shutters using solar operators. All halogen bulbs have been replaced with LED bulbs where feasible.

Working in Magnificat's gothic arch hoop house, which is complete with solar

Annual soil samples are taken to determine application of fertilizers on turf based on need, reducing applications from six to four annually. Facilities personnel remediated fixtures to eliminate lead in water and tested in 2015. All new campus plantings are native species. Students installed a rain garden planted with natives, diverting a 2,500-square foot roof section of storm water from the city sewer system. Magnificat partnered with Holden Arboretum toward certification as a Tree School. Students have inventoried and evaluated campus trees, and actively develop plans to reforest the campus. Rain barrels are used to supplement irrigation of the vegetable garden.

In 2008, the Magnificat recycling program was formalized with single-stream recycling and a separate contract for composting. Recycling and composting centers are strategically located around the school. All classrooms and office spaces have a single stream recycling bin and a marked landfill receptacle. Magnificat introduced "Mother Earth," (the environmental science teacher dressed in character) to the school community in 2008, and she appears at school gatherings to help raise awareness.

Magnificat began its conversion to a paperless environment in 2011. The school cafeteria uses compostable service plates and utensils. Faculty and staff are encouraged to use Google Docs, and students are provided devices if they are not able to afford them. Over a quarter million plastic water bottles have been eliminated from the landfill by encouraging the use of a reusable water bottle at one of two water refilling stations.

Magnificat is a no-idling campus, with signage posted at student pick-up locations. The school encourages community members to walk or ride a bike to school, and students walk to all local field trips.

An online work-order system, available to all faculty and staff, ensures quick remediation of facilities maintenance issues before they become a health concern. Exhaust systems and ventilation equipment are inspected three times per year, and filters are changed twice per year. Magnificat created a Safety Committee in 2016,

with members from administration, department heads, and facilities. Meeting bi-monthly, the group reviews all safety issues, including hazardous materials, equipment safety, chemical storage, and IPM matters. In 2015, all mercury compounds were eliminated from classrooms and storerooms. Smoking is prohibited on campus, and signage is posted at school entrances. All classrooms and offices are visually inspected weekly by facilities staff.

Students began gardening offsite in 2013, and secured funding to construct an onsite gothic arch hoop house in 2014 to grow vegetables. Students' gardening efforts have resulted in the donation of over 670 pounds of organically grown vegetables to the local Meals on Wheels program. The hoop area was expanded in 2015 to include a three-season pavilion to be used as outdoor classroom space. It is a NWf certified wildlife habitat and also certified and registered as an official Monarch waystation through Monarch Watch. The main building has a landscaped courtyard and pond, and, in 2016, a grotto with a pond and seating was constructed in an underutilized turf area expanding outdoor classroom space. The cafeteria remodel included an expansion of an outdoor patio with additional seating.

The Magnificat health and physical education program strives to promote holistic health through a wellness approach, which stresses the need for balance in one's life. The annual Big Lil Sis Challenge is an all-school, day-long competition pitting senior/sophomore teams against junior/freshman teams in outdoor field games. Over 65 percent of Magnificat students participate in at least one team sport. The school fitness center was renovated and new equipment purchased in the summer of 2015, and is available to all students, faculty, and staff.

Environmental and sustainability concepts are integrated throughout the Magnificat curriculum, which is aligned to the state 2010 science standards. Care for God's Creation, one of the Catholic social teachings, is included in the faculty/staff annual Mission Day programming. The Magnificat environmental education curriculum pays particular attention to scientific practices, such as asking questions, 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.

In 2012, Magnificat obtained the Fair Trade School designation by Fair Trade USA. Coffee consumed on campus is all Fair Trade, and Fair Trade uniforms are available for purchase. Magnificat holds an annual two-day Fair Trade Christmas Sale, inviting local Fair Trade organizations to campus. Magnificat's Sustainability and Seeds of Service club students have been invited to showcase Magnificat's efforts toward sustainability, conducting tours of gardens and presentations. Marine science club students engage in experiential learning on the Floating Lab at Hinckley Lake in Hinckley, Ohio.

Students participate in a two-day biodiversity investigation identifying an area on campus with the most biodiversity and quantifying their findings. They investigate invasive species, the cause of spreading, and problem-solve ways to stop the spread. Students visit a recycling center/landfill, investigate solid waste in their lunch, and use critical thinking to decrease their waste. They investigate the addition of nitrogen, phosphorus, or a combination of both in campus pond water by adding samples and growing algae for three weeks. Students visit a wastewater treatment plant and observe how waste is removed. They discover how to cook s'mores using solar ovens. Students place slides all over campus to collect data to investigate air pollution. Student-created biodiversity question posters blitz the campus. The school facilities director offers tours to students to learn about school mechanical systems and sustainability efforts.

Retreats for students are offered at every grade level. The freshman class journeys together to spend the day on the school's founders' farm, located on 726 acres in Villa Maria, Penn. The sophomore class walks to their retreat location, bringing only reusable water bottles. They are served a simple meal of bread and soup and reflect on the themes of simplicity, service, and compassion. Juniors and seniors are offered a variety of retreats located at nature settings such as the Lake Erie Beach, the Jesuit Retreat House, Hocking Hills, the Wellness Center at Rivers Edge, and the Villa Maria farm.

Pennsylvania

Wexford Elementary School, Wexford, Pa.

Students with healthy bodies, healthy minds, and a healthy environment

Interconnected programs provide students at Wexford Elementary with the knowledge and opportunities to have a healthy body, healthy mind, and a healthy environment as they learn and grow.

Walking Wexford's nature trail

These programs influence students from the moment they board a bus in the morning, throughout their learning day, and their interactions with each other and the community, until they go home and the custodians prepare the school for a new day and turn out the lights.

To create a culture of sustainability, the Pine-Richland school district tracked consumption on

all utilities to visualize where conservation efforts could be made and to identify areas to become more energy efficient. The district became a part of Duquesne Light's Watt Choices program in 2012 to work on energy conservation practices, and joined the First Energy Friends & Family utility and energy rebates program in 2016. The school district showed a reduction of more than 50 percent in energy usage from the 2015-2016 to 2016-2017 school years. This qualified the district to receive a rebate for the 2016-2017 school year. The district also participates in an energy curtailment program to power down over the summer.

Water conservation is a buildingwide and districtwide focus for the district. Water is tested periodically in all buildings for lead exposure and all toilets are low-flow. Aerators are cleaned every night, and faucet screens are cleaned on a periodic basis. Wexford Elementary has a half-mile nature trail and outside classrooms for students to learn within the environment, and learn about how to responsibly interact with and care for it.

The cafeteria recycling program at Wexford Elementary was initiated by a second-grade student. The student wrote a letter to the principal asking the school to reconsider current practices, and recommended recycling to become a greener building. This led to 24,000 milk and water containers being recycled in the first year of the program alone. Since the inception of the program, Wexford Elementary has recycled over 100,000 milk and water containers. In addition, classes participate by reducing paper use and recycling paper in designated recycling containers in all workspaces and classrooms, in addition to receiving instruction on recycling and reducing.

In 2016, Wexford Elementary established a garden that included two raised beds, with two additional beds installed in 2017. These gardens are maintained by staff and students. In 2018, the garden was connected to STEAM and health curricula. In conjunction with the vegetable garden, the staff initiated a composting program to collect leftover food waste from third grade school lunches, and educate students on returning nutrients to the soil sustainably. All light bulbs, batteries, glass, chemicals, and electronics are recycled or neutralized for disposal. Old computers, monitors, and televisions are recycled as well, along with printer cartridges and cell phones. Green cleaning is the standard, with very few products used for nightly cleaning.

The district's curriculum is aligned to the Pennsylvania Academic Standards for Environment and Ecology. In science, the Pine-Richland district's fourth graders (filtered from Wexford Elementary) scored 94 percent advanced or proficient on the Pennsylvania System of School Assessments.

Students at Wexford Elementary develop lifelong skills through problem-solving, critical thinking, and teamwork. Students stay engaged in the scientific process of

observation, discovery, and reasoning through hands-on Foss and STC Asset kits that pose questions to students and allow them to explore answers through hypothesis, experimentation, discussion, data collection and analysis. The science program at Wexford Elementary is characterized by the use of science concepts in other subject areas, an appreciation for the natural world surrounding the school, and learning opportunities that integrate STEAM topics.

Mt. Lebanon High School, Mt. Lebanon, Pa.

A variety of green initiatives lead to campuswide energy savings

Each day the Mount Lebanon High's instructional team, with the help of a superb support staff, work to provide the best education possible to each and every student. In addition to Mount Lebanon High's regular course offerings, unique opportunities are available to all students through the STEM Academy, Global Studies Program, dance program, theatre program, and state of the art technology education program.

Healthy Schools PA recognized Mount Lebanon High for a variety of green initiatives including, but not limited to: developing a comprehensive recycling and composting program, establishing a locally sourced, healthy food program, having a student-led environmental club, implementing a school energy-savings program, and prohibiting pesticide use on school grounds. Mount Lebanon High went through a thorough design/construction process starting in 2007 with sustainability elements including daylight views, increased levels of thermal and lighting control, reduced pollution, and increased outdoor air ventilation. In 2017, Mount Lebanon High implemented the use of Google Docs and Google Classroom to reduce significantly the number of copies and papers used within the school.

The Mount Lebanon School District takes energy consumption and conservation very seriously. For the five-year period of 2011—2016, Mount Lebanon High School saw a dramatic decrease in energy usage, both gas and electric. The science department has a student-led energy saving campaign in place to continue this focus campuswide.

A perennial garden was developed with a specific emphasis on plants that will best help to sustain pollinators. A seating area was placed within the garden, and is used as an outdoor

Landscaping at the front of Mt. Lebanon High School

learning space for all students. The garden and greenhouse continue to grow while students learn the importance of the outside environment.

The food service department uses biodegradable plates, bowls, and cups in place of styrofoam and plastic products to enable composting through Pittsburgh Garden Company. The cafeteria also provides reusable trays, plates, and bowls to reduce waste. Hazardous waste has been minimized dramatically throughout the district, which virtually eliminates all chemicals. The few remaining hazardous items, including light bulbs, are contained and disposed of properly through Spartan Chemical Company. Less than five pounds per year of hazardous waste is generated by the entire science department.

At Mount Lebanon High, a full year of environmental geoscience or AP-level environmental geoscience is a graduation requirement, with the environmental geoscience course serving as a capstone science course, which all students in eleventh grade are required to take. Environmental education is integrated into all of the science curricula in multiple ways. For example, environmental science classes do creek water studies, biology classes look at genetically modified organisms and water quality, and chemistry classes focus on proper chemical waste disposal. The creek water study is done over several weeks, and the students design and carry out their own experiments to determine the water quality of local creeks. Students are then tasked with coming up with ways to improve the water quality. Students also evaluate Wingfield Pines Conservation District, which has been affected by acid mine drainage. The acid mine drainage is remediated by holding ponds, and students evaluate the effectiveness of this process.

Rhode Island

Potter-Burns Elementary School, Pawtucket, R.I.

A like-new facility where kids get outdoors

Between 2016 and 2017, Potter-Burns Elementary School underwent major renovations, providing a “like-new” resulting facility. In making this investment, the Pawtucket School District was able to incorporate a number of improvements in the use and performance of the building, while also incorporating curriculum focused on sustainability.

With a facility that was more than 100 years old, there were a number of easily identifiable improvements to be made to the school. The challenge throughout was to preserve the architectural beauty of the school while making the critical

improvements. The renovation included upgrades and/or replacement of all mechanical, plumbing, electrical, and fire safety systems, as well as reconfiguration of existing spaces to meet current state standards for educational facilities. Upgrades to all interior finishes included new flooring, new acoustically preferable ceiling, new paint throughout, and a new elevator. All aspects of the design were compliant with the latest version of Collaborative for High Performance Schools Northeast (CHPS-NE). Based upon initial energy models, the renovated school outperforms the CHPS-NE baseline energy usage by approximately 25 percent.

The HVAC system incorporates high-efficiency condensing hot water boilers for heating and energy recovery ventilators that save up to 70 percent on ventilation costs, as well as improving school indoor air quality. All systems are controlled and monitored by a direct digital controls system, which optimizes efficiency and alerts operators about any malfunctions. The circa 1914 steam boilers were donated to the Newport Historical Society upon removal, and are now part of the tour at the Breakers Mansion, a historic facility in the county. Lighting systems in the building all use LED lighting as well as daylighting and occupancy controls to maximize natural light and minimize energy usage and waste. Plumbing systems use low-flow fixtures to reduce water usage in the building by up to 30 percent.

Students coordinate the recycling program, gathering all recyclable products from classrooms and promoting efforts on morning announcements. The Potter-Burns community collects drink pouches and aluminum can tabs for recycling as well as more common items. The school is in the process of implementing a new composting system and installing water bottle filling stations. All classrooms are equipped with a document camera and video projector, and all students in grades three through five have 1:1 computer availability. Newsletters and other communications are sent via ClassDojo and Sky Messenger, rather than paper, and school lunch menus are provided online.

The Potter-Burns renovation project improved the safety and efficiency of the drop-off and pick-up process at school by encouraging walking, bicycling, and carpooling. It added fresh curb striping and other pavement markings, new signage, and separated motor vehicles from pedestrians and bicyclists. Ninety percent of students are walkers, and the local YMCA after-school program employs a walking school bus effort to get kids home.

Potter-Burns' outdoor learning and play space

All cleaning products are ECOLOGO certified. The school implements an IPM plan that includes reducing clutter, sealing areas where pests might enter the building, removing trash and overgrown vegetation,

maintaining clean dining and food storage areas, installing pest barriers, removing standing water, and educating building occupants on these practices. Potter-Burns implements the EPA's Indoor Air Quality Tools for Schools, a no-idling program, and has carbon dioxide sensors in every room.

Potter-Burns has a robust nutrition and fitness program, and extensive health and safety services. Potter-Burns participates in the R.I. Governor's breakfast challenge, "Eat. Learn. Succeed." and the President's Challenge Physical Activity and Fitness Awards Program. It also participates in the in The University of Rhode Island Fresh Fruit and Vegetable program, with an on-site school garden in the works. Physical activity programs include Girls on the Run, yoga, soccer, and the Get Up & Go program. Potter-Burns partners with Coastline EAP, Hasbro, Junior Achievement of R.I., the No Bully, R.I. Foundation, Kids Link, and Aramark for various fitness, financial literacy and safety programs. GoNoodle helps teachers get kids moving with short interactive activities, keeping students engaged and motivated throughout the day. Potter-Burns employs both a full-time school nurse and a full-time social worker.

At Potter-Burns, the Full Option Science System (FOSS), which is aligned with the NGSS, throws open the classroom door and proclaims the entire school campus to be the science classroom. Students take regular excursions outside with their scientific notebooks to apply things they learned in the classroom to novel situations. Outdoor learning spaces include pathways, play structure areas, proposed gardens, sandy spaces, seating areas of various sizes, ball fields, dramatic play areas, and covered wooded areas.

Potter-Burns makes use of on- and off-campus trips during class time. Students visit the local biomes, Audubon Society, Roger Williams Zoo, and Slater Park Mystic Aquarium visits the third-grade classrooms to instill fun active learning with hands-on investigations of live animals and rare bio-facts. The program inspires scientific literacy and inquiry, encouraging students to think critically and creatively while promoting interest and understanding of STEAM with hands-on applications of science aligned with the NGSS.

The purpose of environmental-themed curricula is to enable students to make decisions and take actions that create and maintain an optimal relationship between themselves and the environment, and to preserve and protect the unique natural resources of Rhode Island. An Environmental Studies Collection assembles books on a wide range of topics including global warming, water conservation, endangered animals, pollution, recycling, and alternative energy sources.

The school benefits from support from the local community: Hasbro volunteers created a 50-yard decorative stone gravel walkway linking the school's old front door

steps to a side entrance. The innovative and creative walkway provides access to the original granite front steps, which were remade during the renovation into an amphitheater-like outdoor stage where educators and students can learn outdoors.

The University of Rhode Island, Kingston, R.I.

Practicing sustainability principles on land and sea

At the University of Rhode Island (URI), sustainability is woven into the fabric of operations and educational pursuits. The campus community strives to make its operations as close to climate neutral as possible, and students and researchers are becoming today's environmental champions. A land- and sea-grant university, URI cultivates strong community connections that help to disseminate knowledge beyond campus boundaries. By shaping a greener, more sustainable future for students, faculty, staff, and the extended community, URI leads by example and combats the threats of climate change head-on.

The University was among the first institutions to join the American College and University President's Climate Commitment (ACUPCC) when URI signed the commitment in 2007. Today the ACUPCC, now known as the Climate Leadership Network, consists of almost 700 colleges and universities that have committed to achieving eventual climate neutrality and integrating sustainability into their curricula. The University's first campus sustainability officer was hired in 2010 to support URI's goals of moving toward climate neutrality, and to develop strategies and programs for infusing sustainability into the campus culture through outreach and education. Through her leadership and that of the President's Council on Sustainability, the Strategic Plan for Campus Sustainability and Climate Action was drafted to assess existing sustainability initiatives and identify opportunities across the University.

Energy conservation and efficiency projects the University has completed to date have resulted in a decrease in campus greenhouse gas emissions by almost 30 percent, despite increases in campus population and building space. Much of the emissions decrease is the result of operational retrofits to improve energy efficiency and conservation. In 2007, URI entered into a 12-year, $18 million performance contract with an energy services company designed to reduce energy usage through the replacement of lighting fixtures, windows, heating/air conditioning systems, and other equipment, as well as improvements to building energy management control systems.

Over the past decade, the University has excelled in promoting high-performance building design on its campuses. URI has total of 11 university building projects that

are LEED certified, and three building projects currently in the construction phase that are registered for LEED. All future building projects are expected to achieve a minimum of LEED Silver certification.

Since 2012, the University's 185-foot research vessel, R/V Endeavor, began fueling up with refined biodiesel, making it the first ship in the U.S. research fleet to use the alternative fuel. The URI Foundation established a Greening the Endeavor Fund dedicated to raising funds for reducing the environmental impact of the ship's operation with upgrades such as more efficient lighting, galley appliances, water heaters, water makers, as well as for upgrading engine seals to allow for the use of progressively higher amounts of biodiesel fuel.

The University's Office of Recycling and Solid Waste reports an increased waste diversion rate through successful composting and recycling initiatives, and an impressive reduction in overall campus waste over four years. Campus bottle filling stations divert plastic water bottles from the landfill; a conversion program collects waste oil from the dining halls to make biodiesel; a composter collects food waste for on-site decomposition; and staff, students, researchers and lab personnel receive training to improve their knowledge of safe disposal of hazardous chemical and laboratory waste.

The University will be able to accommodate the projected growth of its campus population without the need to expand land use. Aggressive initiatives to manage transportation and parking demand, and land use planning, focus on low-impact development principles, preserve critical green spaces needed for improved air and water quality, and enhance local habitat value for public recreation. The restructuring of any campus roadway will strive for a "Complete Streets" design, where priority is given to pedestrians and bicycles over automobiles. In its buildings, URI encourages the use of materials and low-VOC textiles to support healthy indoor air quality, and many of the newer structures are designed for passive cooling so that air is naturally ventilated for optimum fresh air circulation.

There is an emphasis on preserving the campus' natural resources by using native and disease- and drought-resistant plants, eliminating auto-irrigation, lowering use of pesticides on the campus grounds, and maintaining rain gardens and green roofs that filter stormwater. The University of Rhode Island's

URI has a total of 11 university building projects that are LEED certified

Watershed Watch program has been touted as one of the best volunteer water quality monitoring programs in the country. It works with local communities to assess water quality, identify sources of pollution in water, and provide information about water leading to more effective management of critical water resources.

URI's dining halls are trayless to reduce the need for water used in washing and reduce food waste. Many academic buildings have dual flush toilets with two effective flushing options: high volume for solid waste and low volume for liquid waste. In the residence halls, low-flow shower heads have been installed, and shower tags have been hung to encourage students to "Limit the Minutes." Together, these strategies and behavior change campaigns not only have cut daily water use in half, saving thousands of gallons of water, but also have helped lower the University's water utility costs.

The University's work to promote health and wellness among students, staff, and faculty is just as ambitious. The campus is well-equipped to support mental and physical well-being through several programs promoting exercise, nutrition, counseling services, and resources to support work-life balance. The Anna Fascitelli Fitness and Wellness Center, a LEED Gold certified facility, is located in the heart of the University's residential area, and features a full body circuit training line, functional and strength training areas, spin bikes, TRX suspension training, and three group exercise studios. Interactive equipment, personal viewing screens, wi-fi access, and Cardio Theatre enhance the user experience. A Wellness Resource Center on the lower level provides a relaxing atmosphere where all members are invited to unwind using the self-guided meditation station with music and meditation suggestions via Bluetooth headphones. Other relaxation tools available include a massage chair, Zen board painting, jigsaw puzzles, and board games.

Located in the Ocean State, the University of Rhode Island has access to the freshest seafood to serve in its dining halls, and is less reliant upon packaged food. The "Catch of the Month" seafood is chosen for the menu based on what's in season, according to the R.I. Department of Environmental Management harvest calendar. All tuna is Wild Planet brand, ensuring that the fish is caught humanely using a single-pole method, and cod for the dining halls is certified under the Marine Stewardship Council. In addition to fish, thousands of pounds of squid, chopped clams, and mussels are freshly harvested from local waters.

When the University's campus sustainability officer position was first created in 2010, it was determined that the funding source for the position would be split between the administration, finance, and academic affairs divisions. It was recognized that, while it was important to focus sustainability initiatives within administrative and operational functions, the University also must be confident that all students are prepared to take on issues of global importance successfully. URI

has the opportunity and responsibility to instill an ethic of sustainability into every graduate, and the URI campus sustainability officer is tasked with overseeing this effort.

More than 30 undergraduate and graduate degrees offered at URI include sustainability as a learning outcome, including textiles, fashion merchandising and design; chemical engineering; ocean engineering; sustainable agriculture and food systems; and the minor in sustainability. Leadership training programs are in development to support faculty members across disciplines infusing sustainability into their syllabi. The minor in sustainability is offered to students of any major, and students choose from a range of courses to fulfill requirements, including biochemistry, communication, sociology, economics, and more. An internship that includes hands-on sustainability experience on campus or in the community and a capstone project both are requirements.

Students completing the sustainable agriculture and food systems interdisciplinary program graduate with the skills and knowledge needed to contribute to the sustainable development, production, harvesting, management, and use of terrestrial and aquatic microorganisms, plants, and animals by society worldwide. The green business area of study is geared toward students who are interested in corporate sustainability, energy efficiency, nonprofit management, green marketing, renewable energy, global environmental challenges, environmental policy, and energy finance.

The Graduate School of Oceanography at URI's Narragansett Bay campus has established a global reputation for excellence in marine research, teaching, outreach, and exploration of the world's oceans and coasts. The "Blue MBA" program is a dual-degree program that merges the Master of Business Administration degree with the Master of Oceanography degree. It is designed for students with a science, environmental science, or engineering undergraduate degree who want to develop their management skills and broaden their marketability.

As a land-grant institution, URI hosts a Cooperative Extension office on campus. The mission of cooperative extension programs nationwide is to put knowledge to work in pursuit of sustainability principles: economic vitality, ecological sustainability and social well-being. Cooperative Extension combines local experience and research-based solutions to allow families and communities to thrive in our rapidly changing world.

The Energy Fellows program offers paid work experience opportunities to undergraduate and graduate students enrolled in any academic major or discipline. Student fellows are selected for positions at URI or with industry partners off-campus

that address real world energy challenges. The Coastal and Environmental Fellowship program provides URI undergraduate students with opportunities to participate in ongoing environmental research, education, or public outreach programs designed to address current environmental and/or societal issues.

Additionally, from 2013 through 2017, more than $50 million in grants have been awarded to the University across academic disciplines for sustainability, energy and/or climate change research and projects.

University of Rhode Island students serve as volunteer mentors for youth programs that encourage middle school and high school students to engage in STEM content, to keep good grades, and to go to college. The youth programs are hosted on campus throughout the year and involve an engineering or environmental science project or challenge.

Virginia

Lanier Middle School, Fairfax, Va.

A green flag offers inspiration throughout Fairfax

Lanier Middle School (LMS) began its sustainability journey during a renovation, which was completed in 2008. LMS students, staff, parents, and the city of Fairfax worked together to ensure an efficient building with such features as increased insulation, automatic shut-off water fixtures, motion sensor lights, temperature controls in unoccupied areas, tinted windows with low-E glass on sunny exposure and thermally broken frames, high-efficiency lighting ballasts, and an “Economiser” on roof top units. In 2015, LMS earned an ENERGY STAR certification and has maintained it. Overall, Lanier has saved $58,520 from their energy conservation program, which is a 7.2 percent savings from the baseline.

In 2009, LMS registered with the NWF Eco-Schools USA Program. As part of this process, LMS established an eco-team comprising students, parents, staff, and the community. This student-led team focused on various environmental issues, such as energy, water, and paper conservation; recycling; and school grounds enhancement with a view toward sustainability matters. Schoolwide audits related to these pathways led to various projects, and resulted in measurable reduction in waste and energy use, increased biodiversity and recycling, and, above all, a schoolwide culture of sustainability.

LMS embraces digital submissions of work to reduce paper waste and has 1:1 computer teams. LMS also offers online textbooks, which contributes to additional monetary savings, saves paper, and is better for student health since they don't need to carry heavy textbooks around with them. The cafeteria has switched from polystyrene to cardboard trays and bowls, and students oversee vermicomposting.

The school participates in International Walk to School Day and Bike to School Day each year. The physical education department conducts a bicycle safety training unit for students, who learn about basic bicycle maintenance, helmet safety, proper hand signals, and rules of the road.

LMS is phasing in Green Seal cleaning products and training and certifying staff in green cleaning. Use of specialized vacuums, HEPA filtered equipment, and buffers reduce particulates and improve air quality. Building materials with low to no VOCs are used. The building's design focuses on improving student achievement by reducing ambient noise, optimizing classroom acoustics, maximizing natural lighting, and improving air quality. LMS has taken additional measures to improve the indoor air quality to meet state and national standards.

The school courtyard, which was a barren and unused area, was converted into an Outdoor Living Classroom (OLC). The OLC is a certified wildlife habitat by the NWF with various ecosystems, a vernal pool, vegetable garden, and dry bed stream. The OLC is fully maintained by the Eco-team, and used across the curriculum for student learning and environmental stewardship.

LMS's fitness and nutrition programs earned bronze recognition from 2011-2015 through USDA's HealthierUS Schools. Students participated in the "True Costs of Food" event with a local nonprofit company through Family and Consumer Sciences classes and eco-club. This event included interactive presentations on healthy eating and locally grown food; harvesting produce from LMS's vegetable garden; and preparing and eating healthy foods like winter vegetable salad, baked kale chips, and roasted turnips and carrots. LMS's Outdoor Learning Classroom contains pollinator, vegetable, and herb gardens, as well as a successful strawberry patch.

Lanier students plant wild celery

The school offers opportunities to compete in teams against other staff members in fitness activities. LMS also implements a variety of initiatives to support student mental health and a positive school climate, including anti-bullying programs, peer mentoring, restorative justice practice, character

education, and a gang prevention program.

All seventh graders participate in a Meaningful Watershed Educational Experience to the local stream, where they engage in water quality testing, learning about topography, biodiversity, and ecology. They also conduct a school Watershed Walk to identify runoff, erosion, and positive environmental practices, as well as areas that can be improved. Students are actively engaged in implementing various stewardship projects on school grounds, whereby they work on real-world problems. Examples of their projects include: building a bioretention cell and rain gardens to reduce erosion and runoff; installing rain barrels to conserve water and reduce runoff and erosion; creating a vernal pool in the neighboring wetland; installing nine water bottle refilling fountains to reduce use of plastic bottles; implementing a student-run schoolwide recycling program; overseeing a food sharing drive, where students donate unused cafeteria food to the local food shelter; and installing a 29-foot-tall hybrid solar panel/wind turbine unit.

The English team collaborates with the art teacher on a project where eighth grade students read *A Long Walk to Water* and create a project in their art elective. In art, students build on their knowledge of the world water crisis to create artwork that educates for social change. Students in Family and Consumer Science class research how laundry detergent affects the environment. Students contribute an environmental awareness piece for each edition of the school newspaper. To apply content learned in physical science class, students conduct school and home energy consumption audits using Kill-a-Watt meters.

Students are able to learn more about the environment and sustainability through various after school extension programs. LMS' very active Eco-club works on maintaining the native species courtyard and promoting eco-friendly habits within the community. They also run the schoolwide recycling program. The Eco-club is one of the largest afterschool programs at LMS, and results in thousands of service hours annually for students. The popularity of this program has caused its initiatives to become a part of the LMS school culture. Students participate in numerous environmental competitions at regional and national levels and win top awards.

LMS was the first school in Virginia and third in the nation to receive the Green Flag award from the NWF EcoSchools USA program. LMS students and staff are active members of the district's Get2Green Committee. LMS has hosted many Fairfax County Public Schools principals' meetings, countywide environmental in-services, and workshops. In 2006, LMS was the first middle school in Fairfax County to engage and require all seventh graders to participate in an environmental stewardship project. Later, other Fairfax County middle schools followed this lead, and used LMS stewardship project guidelines at their schools.

The school has collaborated globally with schools in Ireland and India, where students from both countries share their environmental learning experience, human effect on the watershed, and diversity with each other. Global classroom projects include waste management practices, level of water pollution and its influence on the watershed, and schoolyard management practices and learning experiences. In 2017, LMS students and staff participated in the Global Environmentalist International Study Travel Program, and traveled to Costa Rica.

Henry County Public Schools, Virginia

Good stewards of the environment and financial resources

Henry County Public Schools (HCPS) serves 7100 students in preschool through grade 12 in Henry County, Va. An economically disadvantaged locality of 384 square miles in southwestern Virginia, Henry County is a rural setting.

Henry County Public Schools believes all students and staff must be good stewards of the environment and the school division's financial resources. HCPS embraces energy conservation, and recognizes that minimizing energy consumption and related costs will maximize funds available for use in the classroom. HCPS's program extends beyond the energy conservation and facilities management; the program is designed to include all facets of an environmentally responsible division to include the health and safety of students and staff, a robust environmental education program, and community outreach.

Henry County Public Schools takes a comprehensive approach to sustainability. An established energy conservation program with short- and long-range strategies to reduce energy consumption has been in place since 2009. Energy monitoring and reporting of consumption and cost to engage the community in supporting the energy conservation efforts of the division has resulted in each Henry County school receiving an ENERGY STAR certification for reduction in electric consumption, which has been earned annually by each of the division's 14 schools for the last nine years.

HCPS uses EnergyCAP to track energy and greenhouse gas data, target reduction goals, benchmark buildings, submit data to ENERGY STAR, measure and verify energy savings, streamline utility bill processing and auditing, create budgets and forecasts, and to track energy usage. A report is generated monthly and distributed to all stakeholders. The report details cost savings, energy costs, energy usage, cumulative greenhouse reduction, and cumulative energy savings. Carbon dioxide emissions are evaluated annually.

The addition of solar panels at one of the middle schools not only supports energy initiatives, but also provides a platform for educating students in the use of alternative energy and is an integral part of the middle school science instruction. Practices also are in place to ensure that the HCPS facilities are both sustainable and safe for students and staff. To promote a safe, healthy learning environment and to complement the energy management program, each campus annually reviews and adheres to the preventive maintenance and monitoring plan administered by the campus physical plant for its facilities and systems, including HVAC, building envelope, water quality and conservation, chemical safety, and moisture management.

The county has replaced all mulch in the flowerbeds with brick chips, which are equal to mulch in their ability to regulate moisture and temperature levels in the soil, but does not rot, decay, or decompose over time. The fact that bricks do not need to be replaced each year helped reduce operations costs and cut down on emissions by not driving large trucks to each site every year. One of the largest benefits realized in replacing mulch with brick was facility pest management control because brick does not attract insects like mulch does.

A mobile clinic provides health care to Henry County students

County leaders have found that the area has roughly 55 percent heating days and 45 percent cooling days in the area, which makes it more beneficial for HCPS to use black single-ply rubber roofing material (versus white material). To increase the R-value of insulation, black rubber roof material is used to help hold the heat in the building, which, in turn, reduces carbon footprint by reducing boiler operation at each site.

In addition to facility improvements and ongoing efforts to enhance the comfort of each student's learning environment through elimination of allergens, HCPS also recognizes healthy behaviors of students and staff as vital to the success of the school's instructional program. HCPS has high standards for nutrition and fitness in order to improve student and staff health, attendance, and achievement, and encourages staff participation in the division's wellness program. The use of local produce as well as site-grown vegetables enables schools to offer students and teachers fresh produce and a platform for instruction. Each of the schools in HCPS meets all of the requirements for the USDA Healthier US School Challenge, and has received the

Silver Award level based on the schools' menus and level of student participation. The division also has recently been awarded the Dorothy McAuliffe School Nutrition Award for going above and beyond by operating all available federal child nutrition programs and achieving significant participation in the school breakfast program.

Each Henry County school has multiple during and after-school activities that students can participate in, including physical education classes, organized sports, a physical activities club, archery club, Get Outside club, the Go Far and Girls on the Run clubs, and the JROTC Raider club. The organized sports that are offered include football, cross country, golf, track and field, baseball, softball, tennis, swimming, and soccer. Additional opportunities for recreation and outdoor education are also offered by a community partner, MHC-After 3, and through the local Boys and Girls Club. The division also encourages students to take advantage of local partnerships with the Henry County Parks and Recreation trail and youth athletics services, Upward Basketball programming, and soccer and field hockey offerings offered by Smith River Sports Complex. The division also operates a summer activities camp for students in grades four through eight, during which students devise nutrition and activity plans for themselves and measure their growth and progress throughout the eight-week program.

The county has recently updated its wellness policy and accompanying regulation that details standards for school feeding programs, wellness activities for staff and students, and general health philosophies that will be promoted within the division. Students in prekindergarten through 10th grade discuss proper nutrition in Health classes. Secondary students also study nutrition in biology, nutrition, culinary arts, and advanced physical education courses. Skin health is part of the health and wellness curriculum provided in prekindergarten through 10th grade health classes, as well as in secondary biology classes. HCPS uses FitnessGram standards and assessments to measure physical fitness levels in all physical education students and charts their progress and teachers are implementing the use of WELNET to gather student fitness data. Physical education classes center their curriculum on the five components of fitness, ensuring students' understanding of fitness and health concepts, tracking students' health-related habits and behaviors, supporting student goal setting, and achieving their personal goals/outcomes.

Environmental and sustainability education are an anchor in HCPS' curriculum. In addition to career and technical courses focused on green career pathways and STEM, all students participate in performance tasks embedded with environmental and sustainability standards. HCPS prepares students to be responsible stewards of their environment through collaborative community-centered initiatives that include habitat preservation and practical support for local outdoor attractions through cleanups and conservation campaigns. One particular cohort at Warrior Tech Academy has partnered with the local parks office to fortify bee and other

beneficial insect habitat shelters, as well as to develop community gardens. The renewal-of-resources aspect of their project is paired with school-based recycling and environmental public service announcement efforts that are encouraging action from local civic groups to enhance sustainability in the neighborhoods around the school.

The division's focus on environmental sustainability recently was recognized by the Virginia School Boards Association with the highest honor in the statewide Green Schools Challenge, and has led to the locality's increased environmental awareness through participation in the Green Government Challenge.

Washington

Broad View Elementary School, Oak Harbor, Wash.

Sustainability field trips lay the foundation for the entire school year

Nestled on Whidbey Island, in the middle of the Puget Sound, the Broad View Elementary Explorers are discovering a greener future. Working towards this goal are 434 students, 55 staff, an active PTA, and award-winning facilities, maintenance, and transportation departments. Let's look at a day in the life of this school:

During the summer, a custodial crew uses green cleaning products to sanitize classrooms from floor to ceiling. LED light fixtures are installed to brighten up the exterior, and some diesel buses replaced with propane. Energy savings are estimated at 75 percent, giving Broad View the highest efficiency of energy use of any school in Oak Harbor Public Schools. It also purchases 40 percent of its energy from renewable sources. To conserve energy, there is no air conditioning, and heaters are on direct digital control. Teachers work with students to track energy usage in their classrooms.

Students walk and ride designated Safe Routes to School, passing by the state Department of Ecology-approved rain garden that includes beautiful indigenous trees. Physical education includes a unit on pedestrian safety, and every year students are rewarded for biking to school.

Thanks to a student-led project, students eat breakfast using real flatware. When finished, they stack trays and silverware to be washed in the dishwasher.

Students may head to the library's Makerspace where they can build, create, and problem-solve before heading out for the teacher-supervised all-school walk/run. On

the way to the track, students pass by the learning garden and composting bins. At the near side of the track, there is an outdoor classroom area that has indigenous plants growing around it.

Once the bell rings, students head inside, where teachers proactively teach schoolwide Explorer character expectations, along with bullying prevention and other climate topics. Throughout the year, Broad View reinforces this message with presentations from Citizens Against Domestic Abuse and Taproot Theatre. Some students visit with the school counselor for a "GLAD" check in. The counselor also teaches lessons throughout the year to all the students about ways to keep their bodies safe.

At lunch time, students are encouraged to take only what they can eat and put unopened food items in a bin to be used again. After eating, students put food scraps in a compost bin, recycle water bottles, soak silverware in soapy water, and stack trays to be washed once again.

A group of fourth graders takes the food scraps to the compost worm bin outside every day. Students help disperse the converted soil onto the garden beds. Students help plant this garden annually. Rain barrels will soon collect all the irrigation water it requires.

Metered faucets in all lavatories help with water efficiency. Custodians clean water taps and drinking fountains regularly to prevent bacterial contamination. A few years ago, students undertook a project to mark outdoor drains, so the public would be aware that they flow to Puget Sound and, thus, keep them clean and clear of debris.

Broad View students gathered around the school worm bin

At recess, students play on structures that are safe for the environment and their health. The library's makerspace is open three times a week during recess as well, giving students another option to form friendships. If any injuries occur, school nurses are available to help. Students are taught to be EPA Sunwise, as physical education regularly takes place outside.

In music class, students learn about the life cycle of flowers, and sing, move, and play instruments to depict the travels of the seeds. The music teacher created a musical based on the book *The Tiny Seed*. At the performance, students sing a variety of songs illustrating where the seeds travel, and the hardship they face during their travels. Students learn that some seeds survive and grow into flowers, later releasing their seeds. Similarly, Broad View's art teacher uses the interweaving worms in the school garden as inspiration for art projects. She supports environmental and sustainability literacy through lessons on salmon, Native American studies, trees and birding, and uses recycled materials for art projects throughout the year.

Students look forward to annual field trips for all grade levels first through fourth to Whidbey Watershed Stewards Outdoor Classroom, located on South Whidbey Island. Kindergarteners visit a pumpkin patch on a working farm. Teachers plan additional field trips incorporating science and social studies: fourth graders visit the SPARK Museum of Electrical Invention, and third graders experience Native American life with hands-on lessons at the Whatcom Museum.

Broad View staff members bring scientists as guests speakers into the school. For several years, a local female astronaut has partnered with Broad View by attending its STEM night and presenting to students and parents, as well as leaving behind various rock specimens for display. In the fall, fourth graders experience Wheat Week. An environmental educator introduces the science of wheat farming and water conservation.

After school, the learning continues with enrichment courses sponsored by the Broad View PTA and taught by community volunteers. There are a variety of after school classes to choose from, many with environmental and sustainability subjects.

Carnation Elementary School, Carnation, Wash.

Sustainable leaders of today

At Carnation Elementary School (CES), environmental education is presented as a global issue that touches the local community in tangible ways. Classroom instruction is combined with direct field studies to give the students a sense of place in their local environment and help develop a sense of stewardship toward the local ecosystem. The school partners with local agencies and organizations not only to learn about the environment, but also to work actively at improving conditions. Students are presented the opportunity to work with local scientists, educators,

organic farmers, and specialists who provide them with a perspective and understanding that is personal and meaningful.

The environmental studies at CES are tailored to help connect the students to their environment. Each year, students help raise salmon fry as part of their studies into the salmon lifecycle. These fry are then released into a local stream to become part of the ecosystem. Additionally, students have worked with the local King County government and the Snoqualmie tribe on volunteer tree plantings and riparian zone restoration on local rivers. This work helps to ensure the health of the local watershed and the local animals that depend on this ecosystem.

Carnation is home to a student-led environmental club that works to bring environmental awareness to the student body and reduce the effect of the school on the local ecosystem. The club set up a program that collects food scraps from the school cafeteria for use as hog feed in the community. The students currently are working on a grant to get filtered water bottle stations installed throughout the school building in time for the next academic year. The environmental club also is working on a grant to provide every student with a BPA-free water bottle at the beginning of each school year. Students are developing a graphic to be printed on the water bottles that will demonstrate pride in their school, combined with a commitment to environmental sustainability.

Carnation students search for aquatic macroinvertebrates

CES is a Level Four recognized school in the local government's King County Green School Program. This achievement recognizes the significant effort and progress that the school community has made over the past several years in the conservation of water and energy. Currently, a rain garden, funded by a grant from the Snoqualmie Partnership and King County Flood Control, is under construction on school grounds to process water runoff from the school roof. The garden is being implemented by intermediate students from CES under the guidance of Snoqualmie stewardship specialists.

A major renovation was completed in 2010 in which energy-efficient systems and appliances were installed. The HVAC system for CES is run entirely on high-efficiency, two-stage heat pumps. All lighting fixtures at CES use fluorescent bulbs.

All windows at CES are low-E, double paned glass. The school uses low-flow faucets in all water fixtures to reduce water consumption. All bathrooms have been outfitted with automatic flush, low-flow toilets. All bathroom sinks use automatic faucets to minimize the amount of water used for hand washing. All drinking fountains have signs co-located to encourage conservation awareness and deter wasteful habits. Drinking fountains are regularly checked for leaks.

Carnation Elementary is an irrigation-free school. Three native plant gardens, which require no irrigation, are used to decorate the school grounds. Bark mulch is used in areas to trap moisture and further reduce the need for any irrigation. All storm drains at CES are stenciled with "Salmon to Sound" markings to remind students, staff, and parents to be careful of what goes into the school runoff.

The CES recycling rate is above 60 percent. With food recycling programs currently underway, this rate is expected to climb even higher over the next year. CES has banned all Styrofoam products from campus. All paper (including copy, artwork, paper towels, and napkins) used in the school is made from post-consumer recycled sources. The default print setting for all school communications and work sheets is double-sided printing. All cafeteria trays are plastic reusable, and all utensils are metal, so that students are not provided any single-use items at lunch

Carnation Elementary encourages carpooling by parents that drive their children to school, and has set up a no-idle zone. The school works with a local food bank on several drives throughout the year. A used winter clothing drive helps the community by providing warm clothing for many of the students and families. As the school year draws to a close, students learn about summer food instability and participate in a summer food drive.

Good solar hygiene, including proper use of sunscreen, is also taught to the students by the school nurse. At Oxbow Farm, students learn about sustainability, the importance of bees and pollination, and what makes a "salmon-safe" farm. Carnation Elementary participates in the Girls on the Run program to promote health, well-being, and positive self-image. CES offers a morning walking club, and students participate in 55 minutes of recess daily. Students and staff participate in mindful minutes throughout the school day, and a full-time school counselor provides social and emotional support to students.

Primary grade students learn and participate in the growth and lifecycle of chickens, plants, butterflies, and worms, as well as the importance of healthy soil. Students also study the lifecycle of pollinators and research the environmental harms affecting bees. Third grade students visit a local farm to study the important relationship between pollinators, plants, and food. Fourth grade students study water and landforms. The fifth grade students participate in environmental studies and

activities at multi-day/night trip to Camp Waskowitz in North Bend. Through citizen science programs, like the Great Backyard Bird Count, students participate in field studies and record their data.

Students at CES are encouraged to share their newly acquired knowledge with their families and local community. This sharing empowers students and encourages them to be active learners and advocates for the environment. Throughout the year, students participate in walking field trips that take them into the local community and ecosystem. Off the school campus, students have been involved in tree plantings, river exploration and restoration, forest trail studies, ecological presentations at the local farmers market, in addition to the releasing of salmon fry into local streams.

Eatonville Elementary School, Eatonville, Wash.

Outdoor kindergarten on the district farm

Eatonville Elementary School (EES) is a rural school in the southeast corner of Pierce County. It serves 391 students in kindergarten through fifth grades, with 48 percent of students receiving free or reduced-price lunch. EES has undergone a transformation from an Office of Superintendent of Public Instruction (OSPI)-identified priority school to an OSPI School of Distinction in 2017 due to its work over the last three years. This transformation has been due to a deliberate effort to capitalize on early educational opportunities for students in a place-based educational campus, incorporating outdoor lab and learning sites available in the town and neighboring forest sites.

After years of failed bond attempts, EES finally was remodeled in the last ten years. The renovated building is equipped with lighting and HVAC occupancy sensors for security and long-term energy savings. Also, the school system received a $1,000,000 grant to equip all schools with occupancy-sensitive thermostats and HVAC sensors, which help to further reduce energy consumption. EES makes use of both a sharing table and a sharing refrigerator to reduce food waste.

Eatonville students exploring their pumpkin patch

Eatonville focuses on student health in many ways. Students spend at least 150 minutes each week in physical activities, with at least 50 percent taking place outdoors, including a full 60 minutes of recess daily. The school has tripled school breakfast participation by adjusting the master schedule to support low-income students. EES has hired a new counselor and has a nurse available to provide monthly guidance classes and individual sessions related to bullying, peer relations, and self-esteem. Mental health services are provided through a partnership with Multicare, a local health provider. The custodial staff implements a green cleaning program that incorporates recycled materials and products certified as having lower environmental impact and being safe for human health.

The school is part of a district that has gone through a community visioning plan (GRITS) with a nonprofit partner, GRUB, to build a 3.2-acre farm which has been planned for long-term sustainability, and educational opportunities for growing sustainable crops and production for town and school usage. The farm is a major asset for the students at EES, and especially its outdoor kindergarten. The farm includes a resident barn owl for organic owl pellet discovery, and a newly made lahar trail for educational purposes.

Environmental concepts are integrated into the school's literacy and math program, with STEM concepts and art provided every day in an embedded, practical, hands-on learning format. Educators employ curricula such as Arts Impact and Engineering is Elementary. EES has a library fully outfitted with environmental resources, including books and videos and hands-on examples of plants/animals (fur, bones, et cetera), and multiple art projects in the school that are based on STEM NGSS principles.

Eatonville students have unique opportunities to make actual contributions to the world around them. Water testing data collected as part of the Nisqually River Education Project is shared with environmental organizations to aid in decision making regarding the health of the watershed. In addition, students from all elementary schools participate in tree-planting as guided by the Nisqually River Education Project staff in an effort to promote the health of the watershed and as part of a larger project to re-route the stream. Eatonville students participate in salmon tossing to introduce marine derived nutrients into the Mashel River. Second grade students from Eatonville also helped build rain gardens in the town to help filter stormwater and encourage the planting of native plants.

Weyerhaeuser Elementary School, Eatonville, Wash.

A stream runs through it

With the intentional integration of STEM through an environmental lens, Weyerhaeuser Elementary School (WES) aims to inspire, foster innovation, create safe and strong academic opportunities that allow all students to realize success, and develop 21st-century competencies. The school is in a rural area, miles from any town, surrounded by woodlands and open spaces, with an eight-acre outdoor classroom serving as the natural laboratory centerpiece. A recent grant-funded energy upgrade of the WES facility included a comprehensive energy audit and an upgrade of HVAC system with occupancy controls for the entire school. All WES classrooms have doors that open to the outside and large, energy-efficient windows that let natural light in.

Students and staff employ refillable water bottles, implement a food-sharing program in the cafeteria that donates excess to a local agency for distribution to needy families, and recycle – including aluminum, plastic, ink cartridges, and tallow -- extensively. Students help monitor and contribute to the building's conservation goals. They use only sustainable certified paper.

For students' health, Weyerhaeuser is active in a farm to school network with other districts sponsored by the Washington State Department of Agriculture, and has focused on increasing fruit, vegetable, and milk consumption. Over the past several years, WES has implemented a wide range of programs designed to support student mental health and school climate. WES participates in the Fuel Up to Play 60 nutrition and physical activity program, and offers a morning mileage club. Students partake in a full 60 minutes of recess daily, and engage in brain breaks in the classroom. The school has a full-time counselor, and a staff member designated to support a Positive Behavior Intervention and Support (PBIS) program schoolwide. WES is served by its own well that is regularly sampled and tested for contaminants. The school implements both indoor air quality and IPM plans.

Weyerhaeuser students plant vegetables together

Wildcat Woods, the Weyerhaeuser outdoor education area, includes forest and seasonal wetland. Students are outside in this learning space daily. The school is within the Nisqually River Watershed. Two seasonal freshwater streams flow through the campus, providing students with the opportunity to participate in water testing; studies of rocks, minerals, and macroinvertebrates; and streamflow observations.

Weyerhaeuser has a longstanding partnership with the Nisqually River Education Project to gather water quality data from these and other local streams on a regular basis. Classes discuss results and possible explanations, then explore possible solutions to any adverse conditions. WES invites experts to explain stream problems associated with over-clearing of the riparian zone. Then students engage in action to resolve these problems with yearly tree planting field trips.

The Center for Sustainable Forestry at Pack Forest with 4,300 of working forestland, is 10 minutes from Weyerhaeuser and provides students with the opportunity to learn about forest ecology, forest management and current research in sustainable forestry in a real-world setting. Similarly, Mt. Rainier National Park, with its wide variety of plant and animal species and glacial and volcanic activity, is a short half-hour drive away.

Weyerhaeuser Elementary has a strong network of partners eager to work with students and staff to strengthen environmental STEM education. Its green school staff and student groups have been diligent, public, and persistent in their efforts and the communication of results.

Wisconsin

Brooklyn Elementary School, Oregon, Wisc.

Gardening with gusto

On the edge of rural Wisconsin, in the heart of a small town, sits Brooklyn Elementary School. Though the school has been there for many years, a newly designed brick façade lines the outside of the building, a testament to the community's continued support of the institution. Brooklyn Elementary welcomes 503 students each day with a staff of 70 teachers, support staff, and bus drivers. Walking through the halls of Brooklyn, you will notice staff and students working to create a healthy and green learning environment.

Brooklyn Elementary provides “a nurturing community focused on authentic, student-centered learning” that integrates five values through all they do: whole-child emphasis, educational equity, relevant and empowering learning, strong community and family partnerships, and caring and professional educators. Brooklyn’s Green and Healthy Initiative is one of the ways the school recognizes the whole child and all of the things that kids need to learn, grow, and be successful.

The school demonstrates a significant commitment to sustainability with 14 staff members participating on the Green and Healthy Committee, which also includes parents and community members. Due to the work of this committee, Brooklyn Elementary has received several awards, grants, and recognitions for their green and healthy initiatives. Brooklyn has received grants from Wisconsin Medical Society, Fiskars, and Play 360. The school was invited to advocate for a nutrition bill in Washington D.C. in 2015. The school achieved the highest level of Green & Healthy Schools Wisconsin recognition possible when it was honored as a Sugar Maple School in 2017. Brooklyn Elementary also has received all three prestigious health awards available in the state: Driven to Better Health, Alliance for a Healthier State, and the Wisconsin School Health Award. At Brooklyn Elementary School, there is no separation between “green” and “healthy,” and the school has demonstrated significant achievement reducing environmental impact and costs, improving health and wellness, and increasing environmental and sustainability literacy.

The school has a multi-faceted recycling program. The third and fourth grade student green team helps with classroom presentations, contests, and waste audits. The green team talks with students and staff about how even small and easy behavioral changes can make a big effect on the environment. They participate in TerraCycle, recycle milk cartons, and have eliminated the use of plastic straws.

In addition to recycling and waste reduction, the school installed two water bottle filling stations and motion sensors in bathroom sinks. All students and staff were provided water bottles during the school Move-A-Thon to encourage reusable water bottle use. The school has installed solar panels on the building and, through a partnership with CESA 10 energy management services, has reduced electricity use. Students and staff turn off lights and electrical devices when not in use. The

student green team performs random energy audits to see which classrooms are conserving energy when they're not in their rooms and students are given the role of energy monitor to ensure energy is being used responsibly in their classroom.

Several years back, staff members noticed that students were lacking an awareness of where food came from, and were not eating a healthy amount of fruits and vegetables. The vegetable garden was then begun in 2012, as a small garden with a few raised beds. Over the course of the next few years, the garden was moved and expanded to include more raised beds and an arboretum area with trees and flowers. Filled with lettuce, kale, tomatoes, cucumbers, marigolds and more, the garden has become so much more than a class project. This garden allows all students to experience hands-on learning while improving their knowledge of health and wellness.

Students who participate in the summer school class, "Gardening with Gusto," have the opportunity to care for and harvest the school's garden during the summer. The students enjoyed the activities so much that the school began to offer a salad bar as a part of the lunch menu. Not only do students love cooking with the produce they've planted, but they also enjoy packing up excess produce and donating it to local food pantries and food stands in the Oregon community. Cared for by staff, students and community members alike, the garden has become a part of Brooklyn, inspiring additional events and experiences that are creating change beyond this tight-knit community.

Beyond the garden, students and the community are encouraged to lead healthy and active lives through a menu of programming. Annual events include the Walk or Wheel Challenge, bike rodeo, Seuss on Loose Movement Day, and Beat the Winter Blues Fest. The school organizes monthly contests such as a fruit and veggie challenge, a healthy recipe contest, and the "Race to Lambeau" walking path challenge. Teachers provide brain breaks by using yoga and GoNoodle to encourage physical activity throughout the school day. The school also established an annual Move-a-Thon, which includes various dynamic physical activities such as a choreographed flash-mob, a mini boot camp, and yoga with certified instructors, to raise funds for community wellness equipment.

During the 2013-14 school year, more than $35,000 was raised by parents and community businesses. These funds were used to build a community parcourse adjacent to the school's already established walking path, providing a healthy and free way to exercise. The most recent fundraising initiative has added an indoor movement room, which is supplied with kinesthetic and sensory activities and equipment.

Brooklyn Elementary offers many hands-on, real-world environmental learning opportunities to motivate students to learn. A few projects stand out, including the second grade's "Great Character Gourd Project." Students plant gourds in first grade, harvest them in second grade, and create a main character from a book, along with a motion-animated story summary. In addition, fourth graders have participated in a STEAM project after assessing problems in the garden. They planned, organized, and constructed a handicap accessible pathway and new irrigation system. Students also learn about pollinators and the health of the earth through hands-on experiences in the butterfly garden in the school's courtyard, and planted a prairie near the school grounds. The science curriculum intentionally integrates teaching environmental responsibility and examining environmental impact and costs throughout all grade levels.

Overall, Brooklyn Elementary is committed to teaching, promoting and practicing healthy habits that will develop future sustainability leaders.

Oregon Middle School, Oregon, Wisc.

Forty percent renewable energy generated on-site

At Oregon Middle School (OMS), the motto is: "Learning for ourselves, each other, and the world." Located in a suburban Dane County community, the 570 seventh and eighth grade students are encouraged to show respect, responsibility, and empathy by asking meaningful questions, thinking independently, working collaboratively, taking ownership of their actions, advocating for equity and social justice, and serving their community. These guiding principles serve as the foundation of the initiatives throughout the school that result in reducing environmental impact and costs, improving health and wellness, and increasing environmental and sustainability literacy.

The school generates 40 percent of its energy needs from on-site renewable sources, including geothermal and a 198 panel solar array electric added with the construction of a facility addition in 2014. Hallway lights are on motion sensors. New classroom lights are LED and on motion sensors. In older classrooms, where lights haven't yet been replaced, teachers use only half the lights in the room, which provides sufficient lighting.

Students and staff participated in "Cool Choices for Schools," and are now considerably more aware of measures for and effective at conserving electricity in school and at home. Staff members have removed personal refrigerators and use desktop task lighting. Students monitor building energy use and use a solar

charging station for personal devices. Low-flow plumbing fixtures are used in bathrooms. Future goals include adding additional solar panels, purchasing green power, and further reducing paper use.

In the cafeteria, the school implemented composting and recycling, complete with waste sorting bins. Students sort their waste and food scraps and napkins are composted on site. Milk cartons are recycled instead of being put into the garbage. Outside, the school uses dripline garden watering, planted live landscaping, restored a prairie and forest, and established a food garden and fruit tree orchard. Parking lot lights have been replaced with LED. No-idling signs in the drop-off and pick-up loop help to encourage better air quality and reduce fuel use.

For the past fifteen years, OMS has been implementing their green and healthy initiatives for which they have received numerous awards, recognitions, and grants including: Let's Move Active Schools 2015 National Award; Alliance for the Healthier Generation National Bronze Level Award 2015, 2017; Wisconsin School Health Award - Gold Level 2015, 2016, 2017; Sustain Dane Metcalf Garden Leadership Award 2012; Wisconsin Department of Natural Resources Urban Forestry Grant; and a 2010 Alliant Energy Foundation Grant. In 2017, OMS was selected as the Green and Healthy Schools Fall Solutions Summit host school. The Wisconsin Center for Environmental Education News to Note featured their work in 2014, and the Wisconsin State Journal reported on their new greenhouse in 2011.

A greenhouse and a hoop house involve students in growing the cafeteria's fresh produce

Growing and eating food from their own gardens is an important green and healthy cornerstone for OMS. The school has a greenhouse and a hoop house to involve students in the process of growing the food that supplies the cafeteria with fresh produce about ten months of the year. During the 2017-2018 school year, the food service director at OMS worked with an AmeriCorps farm to school specialist to further improve healthy food options in the hot lunch program. OMS continues to strive for excellence, and among the school's goals moving forward are to more closely monitor indoor air quality, such as carbon dioxide concentrations and other pollutants, and assess indoor lighting and acoustical comfort to provide an optimal learning environment.

Teachers of science, health, English, art, and technical education classes collaborate to advance environmental literacy and sustainability. Through multiple courses and a number of activities, students explore concepts of climate change and energy production and usage. Students understand how resource use directly affects earth systems, and that alternative choices, now and in the future, can preserve those earth systems. Eighth grade science and tech students experiment with solar panels and power generation. Students learn how alternative energies such as wind, geothermal, and solar reduce climate and health effects. Students use the live data from the school's solar panel array to see how much energy the school is using. In addition, students do mathematical power conversions and learn how to reduce energy usage both at school and at home. Engineers from the Department of Natural Resources, Madison Metropolitan Sewerage District, and Dane County Landfill are guest lecturers in science and tech classes. Students use outdoor classrooms in the prairie, forest, and food garden for many of these classes. Seventh grade students work on the restoration and expansion of the school forest, and have planted over 3,000 trees in the past three years.

Since 2003, Oregon Middle School eighth grade students have partnered with Oregon Rotary club to support a prairie restoration at a local park. Students remove invasive honeysuckle brush, build and maintain gravel trails, and plant nearly 2,000 native prairie grasses and forbs. Since 2006, students grow all of the plants at school. To support the continued growing of the prairie plants and the advent school garden programming, in 2011 the Rotary club purchased and constructed a 50-foot hoop house, where students grow salad greens for the school salad bar in the spring and fall, and installed a large four section compost bunker for cafeteria waste. The salad greens are the nutritional part of a larger health curriculum focused on health equity and the diverse needs of students, and assessments related to student mental, emotional, physical, spiritual, academic health.

In 2017, a new addition, comprising three new science rooms, complete with a 50-foot greenhouse and a new technology education shop, was opened at OMS. In the greenhouse, students grow native prairie and woodland plants for local restoration projects. The outdoor gardens provide produce for a summer school gardening and cooking programs and donations to the local food pantry. During summer school students grow, sell at a roadside stand, and cook produce from the garden.

Gateway Technical College, Kenosha, Wisc.

Sustainability and health meet on green walking maps

Gateway Technical College is committed to sustainable practices that positively affect students, staff, and the surrounding community.

Gateway signed onto three different efforts to demonstrate its support for strong climate action: American Association of University and College Presidents' Climate Commitment (now known as the Carbon Commitment), The American Campus Act on Climate Pledge, and the Second Nature Climate Leadership Commitment. Since 2009, Gateway has achieved a gradual reduction of 25 percent of total emissions.

Accordingly, every Gateway campus includes some form of renewable energy – a mix of wind, solar, and geothermal. All new buildings and expansions are constructed to LEED Silver standards. Gateway has installed highly efficient LED lighting in all remodels and retrofits, achieving 50 percent savings in electricity and helping to lower cooling costs. New lighting installations also include enhanced controls and daylighting. The entire college telephone system is on a centralized voiceover internet protocol (VOIP) system that is much more energy efficient than separate systems at each location.

On the Kenosha campus, rain sensors tie into the irrigation systems so that sprinklers do not operate when there is already enough moisture in the soil. New landscapes, such as those related to building expansions, use drought-tolerant species in place of high-maintenance turf grass to reduce the need for watering, and some high-maintenance areas have been converted into areas of native prairie grass. A portion of the Racine Campus Technical Building has a 4,100-square-foot green roof designed to mitigate runoff.

The college encourages students and faculty to drive efficient vehicles. Preferred hybrid car parking spaces are available at all facilities. The horticulture department uses a small electric vehicle to move plants and supplies. All campuses have bicycle racks, and two campuses have been connected to city bicycle pathways. Travel reduction efforts include course availability through distance learning and for delivery of services online.

The college aggressively recycles 90 percent of computers, monitors, printers, fluorescent lamps, and other electronic equipment. A green printing initiative reduced the amount of printer paper purchased by 53 percent. The college has established guidelines for ribbon cuttings, groundbreakings, and other events that help to minimize their environmental footprint. This includes publicizing recycling policies and making sure recycling containers are placed on site, providing pitchers

or water coolers where participants can fill their own reusable water bottles, and serving food grown locally or provided by local vendors.

All campus buildings have automation systems that regulate comfort conditions according to programmed settings as well as control humidity. Building environments are maintained rigorously to create safe and healthy environments for all occupants and visitors, especially those with special sensitivities such as allergies and asthma. Campus grounds and building exteriors are maintained using a minimum of chemicals and, where treatments are necessary, using the most environmentally benign products consistent with effectiveness. Proper product selection and best practices for use of cleaning products safeguard the health and safety of building occupants.

Gateway is one of only 32 employers to earn the Wellness Council of America (WELCOA) Well Workplace Gold Award for results-oriented wellness programs, earning it in 2010 and then again in 2017. Its integrated wellness program follows the WELCOA model in promoting physical activity, healthy eating, tobacco cessation, stress reduction management and medical self-care. The college recently initiated a free on-campus health clinic, providing health care quickly, affordably and efficiently to staff members. The on-site nurse practitioner and nurse provide health and wellness coaching to staff, as well.

Gateway's Center for Sustainable Living

Gateway's Urban Farm provides fresh food every Thursday during the growing season on its Kenosha campus. The farm is run by Gateway students. Many of the foods grown there are organic, and efforts are made by staff and students to keep those gardens pesticide-free. Healthy eating and weight management programs include on-site Weight Watchers meetings and special seminars and contests.

A nature trail with exercise stations is located on a natural prairie with a pond on the Elkhorn campus. The College's wellness website provides maps of each campus showing suggested walking routes and specifying their distances. An initiative of the college to combine sustainability with physical activity resulted in "green" walking maps for

each of the college's three main campuses. These maps point out the locations of various sustainability features of the campuses, whether environmental (natural) or a college initiative (facilities or program related).

Other outdoor learning areas include the Brookhouse Arboretum, which was developed in 2015-16 next to the Pike Creek Horticulture Center in Kenosha, and now includes 54 trees. An outdoor classroom between the arboretum and the urban farm allows classes to spend more time outdoors and also is available for community activities.

The Gateway commitment in these areas is embodied by the Center for Sustainable Living, a 1,884-square-foot house, outbuildings, and gazebo on the Kenosha campus that together provide an sustainable backdrop for project-based, interdisciplinary learning. The Center's key functions are to provide a living and learning laboratory for students and a meeting place for staff; enable outreach to the community through tours, workshops, group activities, and meeting space for green-focused organizations; and support outreach to kindergarten through 12th grade school districts through field trips and hands-on projects. Instructional offerings at the center cover sustainable practices including gardening, renewable energy, home energy systems, food preservation, and smart recycling.

Not including Gateway students and staff, more than 2,000 people used the center in the 2016-17 academic year, including 950 kindergarten through 12th grade teachers and students. The house interior has flooring of cork and sustainably harvested wood. One room is dedicated to showing interior decorations and furnishings that use recycled and other sustainable materials. A sustainability library provides books and other materials on green topics. The grounds include a natural prairie, a creek bed, a small apple orchard and many types of other trees, providing habitat for birds and wildlife. Space is available for creating small urban farm plots.

A quarter-mile Nature Discovery Trail on the property includes five stations with activities involving solar energy, recycling and composting, birds, trees and insects. The trail is available for field trips and a private scholarship has paid for learning backpacks that provide tools for kindergarten through fourth grade students to discover and interact with the environment while they are on the trail.

Located on the same grounds as the Center for Sustainable Living, the bee barn allows visitors – many of them elementary school children – a closer look at the creatures, which play a huge role in the food system. Visitors can examine the lifecycle of a honey bee, match up a bee's anatomy, and discover why bees are drawn to specific flower species, through a number of educational displays and interactive exhibits.

The college seeks to train the workers of today and tomorrow with the skills to enter green and sustainable careers with associates degrees and technical certificates in areas such as arboriculture and urban forestry, horticulture, fresh water resources, environmental studies, sustainable design, urban farming, and air conditioning, heating and refrigeration technology. In addition to these specific career pathways, sustainability-related learning is embedded within all areas of the curriculum with courses such as Principles of Sustainability.

Outside of the classroom, Green Scholars provides students the opportunity to learn about sustainability, get involved in green and sustainable efforts, and earn recognition when they graduate. They earn points for specific green activities, from using compact fluorescent or LED light bulbs, to packing waste-free lunches, to riding a bicycle or public transit, to buying an energy-efficient refrigerator. Those who collect at least 50 points graduate as Green Scholars, and are honored each year at the college's graduation ceremony. The Sustainable Living student group practices renew, reuse, refuse, reduce, and recycle concepts promoted by the college. Members also run workshops that repair electronic equipment for reuse and donate used clothing to local shelters

In modeling respect for the environment, Gateway reaches out to its communities with a host of activities. Gateway instructors have taught Boy Scout merit badges for energy and soil and water conservation, as well as hosting many Girl Scout troops for sustainable-focused activities. Gateway hosts SkillsUSA competitions. The college's three primary horticulture instructors are sought-after speakers and workshop presenters. Gateway's summer camp program, offered with the Boys and Girls Clubs of Kenosha County with Snap-On Incorporated, includes two weeklong sessions with environmental themes. A solar energy week includes hands-on activities that include cooking in solar ovens and building and racing solar-powered cars. A sustainability week covers horticulture, native birds, renewable energy, recycling, and exploration of the Center for Sustainable Living.

More than a thousand participants attend Gateway-sponsored annual community celebrations designed to share information and engage residents in adopting more sustainable lifestyles. Earth Day events on two campuses celebrate the environment with displays, workshops, and hands-on activities with support from private and public sector partnerships. At EcoFest Racine, participants enjoy cooking demonstrations, informational presentations, children's activities, and displays from more than 50 product and service vendors, educational institutions, nature centers and parks, and community organizations.

Acknowledgements

Over the past year, ED employees Kathrina Bridges, Jennifer Padgett, and Bernice Williams have pitched in to keep this project running on the very slimmest of budgets. This program would not be sustainable without their invaluable assistance.

Of course, this entire award would not be possible without the participation of some 30 state education agencies and their hardworking partners, which have built their own green teams to oversee statewide competitions that select schools, districts, and postsecondary institutions to nominate to ED. They are a most dedicated group of facilities, health, and environmental education professionals, who support the work of the schools, districts, and postsecondary institutions in states across the nation.

Finally, thanks to Adam Honeysett, ED's managing director of state and local engagement, for his unfailing support of ED-GRS and its director.