U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

Highlights from the 2017 Honorees

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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, and the Earth Day Network steered some 80 national and state-based nonprofits 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:

1) reducing environmental impact, such as waste, water, energy, greenhouse gases, and transportation in the areas of facilities, grounds, and operations;
2) improving health and wellness by promoting a healthy physical environment (including aspects such as air quality, contaminant control, acoustics, daylighting, and thermal comfort) and student and staff wellness practices (such as healthy school food and outdoors physical activity); and
3) 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 Functions

Going beyond the simple award requested by nonprofit stakeholders, ED-GRS has become the federal communications and outreach tool around specific areas that ED had, until its advent, infrequently addressed. The award has allowed the agency to use its bully pulpit 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 the incorporation 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 and liaising functions, with a resource web site, www.greenstrides.org, and an annual 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 around the three Pillars, to the extent that ED's limited federal resource commitment allows.

ED-GRS by the Numbers

With the 2017 cohort, the award has now honored some 340 schools, 56 districts, and 34 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 kindergarten through 12th grade school or district candidates and 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, beginning with the 2017-2018 cycle, schools nominated from districts that already have won the award will need to 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
Total	340	56	34	430

*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

- 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 and 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/or place-based, authentic, environmental, civic, and sustainability learning, among other related topics. The award has also 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 new and 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

Some 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 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 highlighted diverse examples of sustainability, it always has assessed candidates based on resources available to them, rather than in comparison to each other. For this reason, 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 2017 Cohort

This year's selectees were confirmed from a pool of candidates voluntarily nominated and exhaustively reviewed by 29 state education authority implementation teams, including 28 states and the Department of Defense Education Activity. While selection processes vary from state to state, members of several state agencies as well as outside experts generally comprise selection committees. At the federal level, we have selected 45 schools, nine districts, and nine postsecondary institutions that demonstrate promising practices to cut costs, improve health, and ensure that students learn through the most hands-on, engaging means possible.

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

Schools use sustainability in context to teach important civic values and skills that encourage students to grow into responsible, compassionate, and contributing citizens. Furthermore, working with dynamic environmental, social, and economic systems from an early age nurtures precisely the type of thinking, collaboration, and problem-solving skills that 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 2017 U.S. Department of Education Green Ribbon Schools, District Sustainability Awardees, and Postsecondary Sustainability Awardees. These honorees are ensuring that their

students learn to live, work, and play with sustainability and health in mind, not as an afterthought, but as an integral part of everything they undertake, from cradle to career.

The 2017 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

- 45 schools, including 1 charter, 6 nonpublic, and 5 magnet schools
- Nine school districts
- Nine institutions of higher education, including three career and technical and community colleges
- 28 disadvantaged (44 percent)
- Nine rural (14 percent)
- 63 honorees total, from 28 nominating authorities

2017 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 Program Manager **Keisha Ford-Jenrette** from the Georgia Department of Education as the 2017 U.S. Department of Education Green Ribbon Schools Director's Award recipient.

Ford-Jenrette piloted ED-GRS in Georgia and gave the award a permanent home in her office. She fosters collaboration among government, nonprofits, for-profit partners, and schools. She supports schools and districts in the process of applying, including providing feedback and mentoring so that they can improve for re-application. She has partnered with Captain Planet Foundation to offer a significant cash award to honorees; liaised with the Georgia Lieutenant Governor's office for state recognition festivities, releases, and citations each year; and developed a state-level honorable mention to broaden recognition and reward promising efforts. In sum, Ford-Jenrette has modeled excellence in ED-GRS implementation for other state education authorities to follow.

We commend Ford-Jenrette for her work to promote environmental stewardship, health, and sustainability, and for inspiring even more schools, districts, and postsecondary institutions to aim high.

2017 U.S. Department of Education Green Ribbon Schools

Alabama

Childersburg Elementary School, Childersburg, Ala.

Where student clubs take the lead in sustainability efforts

All 223 students at Childersburg Elementary School, 85 percent of whom are eligible for free and reduced-price lunch, and all faculty members are part of one of eight clubs that are participating actively in projects that work toward environmental stewardship, responsibility, and awareness.

The Green Team has been busy with monthly campus cleanup, raking and using pine straw to protect shrubs and plants around the campus, and repurposing shredded paper to make decorative ornaments for the community. Members of the This is How We Roll club give public service announcements about living healthy and taking up healthy habits, which are broadcasted over the school intercom system, Twitter, Facebook, and the school web site, as well as posted in community storefronts. Get on Board club members repurpose two-liter bottles to use as watering systems for the lettuce they grow, which is harvested and shared in delicious salads. The Full Steam Ahead club upcycles items donated by community members into flower pots that are gifted in the spring.

Another group, The Earthworms, has been recycling toilet paper rolls and milk cartons into bird houses and feeding perches that are hung in trees on campus to attract native birds. The Earthworms also are planting saplings that have been raised from seed by community members, who provided education on how students could cultivate their own saplings.

In their regular curriculum, Childersburg students engage in project-based learning, such as the second grade's Breaking it Down unit, during which they studied trash that had been collected for 42 days. Students learned firsthand what decomposes and what does not, and then studied the resulting effect on the environment. They created Leaders Don't Litter stations that are stocked with gloves and bags, so when classes go outside, they can be good stewards and keep the campus clean. They also created a Lost and Found wooden box that is located by the back door of the gym. This helps students and parents find items and not repurchase.

The school was ENERGY STAR certified in 2009 and 2014 with a Portfolio Manager score of 88. Childersburg has reduced energy use by 25 percent and water consumption by 33 percent over 10 years in the renovated 1961 facility.

Multiple community members have been invited to Childersburg to help students learn environmental stewardship and wellness practices. Southern Company, the local utility, works with the school to educate students about electricity; local chefs give demonstrations about cooking and keeping meals healthy; and SAFE in Sylacauga offered an interactive play about healthy eating habits. The school nurse actively promotes good student health by creative visual displays outside her room; newsletters for students, parents, and community members; and mini-lessons for students in individual classrooms.

Childersburg's playground area used recycled tires that had been ground up and treated to make it safe to use as mulch. Eight faculty members, three community members and over 100 students took part in spreading this mulch. All 223 students participate in an annual Turkey Trot fun run. Students are asked to walk and run not only at school, but also at home. They are responsible for encouraging family and community members to take part with them to develop healthy habits. Childersburg offers Childersburg At Play events, during which parents and community members take part alongside students in after-school activities that promote life skills and physical education skills. Zumba, walking, biking, and stretching activities have been offered during these events.

All classrooms strive for the Golden Bowl and Golden Broom awards. Students are encouraged to eat healthy, and the class that does the best job eating a balanced lunch is awarded the Golden Bowl for the week, which they proudly carry with them to lunch daily. Students also are encouraged to keep their campus and classrooms a clean, safe, and healthy place to learn, with the classroom that does the best job at this awarded the Golden Broom weekly to display outside their classroom door.

Sycamore School, Sycamore, Ala.

Partnerships and critical self-care under the sycamore tree

Sycamore School serves 212 kindergarten through fourth grade students, 88 percent of whom are eligible for free and reduced-price lunch, in a rural area of Talladega County. Sycamore as a community is a closed mill village town, with only three small businesses and one small new production industry, making this little school the hub of many great things for the community.

The facility, originally constructed in 1938, has been renovated to be much more energy efficient and environmentally healthy, with new well-ventilated HVAC room units, new roofing, and a state-of-the -art playground that provides a variety of outdoor exercise. Sycamore received its ENERGY STAR certification in 2009 and

2014, and has a score of 93 in Portfolio Manager, having reduced energy use nearly 30 percent over 10 years.

The school is the hub for community recycling efforts and promotions as well, through a partnership with the Talladega County Commission that helps provide recycling bins. Students and local businesses partner to advertise recycling days, and are onsite to offer information about the school's other sustainability efforts as well. The school has developed a partnership with the local power company to establish gardens, provide energy education, and develop broader conservation values. For rural children, this has been a major connection to careers, stewardship, and civic learning.

Sycamore School partners with Wind Creek State Park, about 35 miles away. With the help of a grant, for a week in the summer, 25 third and fourth graders spend the day studying numerous environmental areas as they explore, research, and develop skills as Junior Park Rangers. No one is ever late for this early morning bus ride, and parents almost always have to wait for their little rangers to return, as they never want the day to end.

Gardening at Sycamore is so much more than planting, watching things grow, and harvesting for students, staff, and community partners. It includes systematic composting by a group of students for all the garden plots; four 50-gallon rain barrels with highly valued and carefully measured water collection for the gardens -- with shared knowledge that the water is better than "bought" water -- and food harvested that is valued for quality nutrition, money saved, and the shared sense of community it adds. Even during the winter, students enjoy environmental studies as grow lights with plants for the outdoor gardens are maintained by grade groups for appropriate seasonal crops.

There is a specific area in the school gardens for each grade level to develop, maintain, label, and promote, whether it is butterfly plants for pollination or the vegetable gardens. Students at each grade level also have a section of the campus to keep litter-free. Upper grade students are responsible for the composting from the lunchroom, managing the rain barrels, and assisting with carrying recyclables to the bins daily.

Garden learning has enhanced nutrition education as well. Ninety-five percent of Sycamore students have breakfast and/or lunch provided by the three school cafeteria staffers, a group that earned the HealthierUS School Challenge Gold Award of distinction designation in 2014. Nutrition is a part of the health and science curriculum throughout the year, and also is integrated into physical fitness activities and clubs. All students have been provided lessons from EPA's Sunwise sun safety program.

Leader in Me and Lighthouse standards are incorporated in cross-curriculum and full school activities, promoting development of habits in leadership, teamwork, understanding of self and others, being proactive, and a habit referred to as "Sharpen the Saw," through which students are encouraged to practice self-care Clubs are not a simple social outlet, but rather are organizations with a purpose. Many clubs focus heavily on environment, fitness, and nutrition, meeting at least biweekly to participate actively in their goals and related activities. These include a dance club, composting club, tabs (aluminum can) club, gardening club, running club, and the chef's club. These clubs have been active for several years, and outside partnerships, speakers, and programs all are part of their practice.

University of Alabama at Birmingham, Birmingham, Ala.

College as a living laboratory for sustainability principles and practices

At the University of Alabama at Birmingham (UAB), administrators, faculty, students and staff work to integrate green values in all aspects of campus culture, from reducing environmental impact and costs, to improving health and wellness, to providing effective environmental and sustainability education.

The school aims to serve as a living laboratory for its members and the surrounding community by fostering sustainability literacy, solutions, and leadership; committing to core sustainability principles in all facets of planning and operations; promoting healthy lifestyles; and shaping solutions to global challenges.

When it comes to safeguarding the environment, raising awareness and modeling green practices, UAB's influence is significant. The campus – with over 170 classroom, office, research, and hospital buildings – spans more than 16 million square feet of space and 90 city blocks. UAB is as the single biggest contributor to Birmingham's economy, as well as the state's largest single-site employer and its largest electricity user.

To manage environmental impact and costs, UAB assessed energy use and expenses, installed efficient technology and systems, added renewable energy to the institution's energy platform, and adopted smart systems that prevent waste of construction materials, energy, water, food, and materials. In the 2015-2016, energy system improvements yielded $13.6 million in savings, with $18.2 million in savings expected for 2016-17.

The university has set ambitious goals, including cutting greenhouse gas emissions by 25 percent and reducing annual energy costs by more than $15 million within ten years, and has designed custom solutions for specific needs. For example, chilled water service for industrial needs like 24-hour cooling is essential for a campus with sensitive research and acute-care hospital facilities. In response, UAB developed an innovative system to deliver chilled water to buildings in a 4.5-mile closed loop, and recover condensate water and collect groundwater for use in this system. In 2015, this process yielded over 50 million gallons of potable water.

Other efforts include lessening food waste in the campus restaurants, converting used cooking oil into biofuel, managing and reducing hazardous wastes, reducing traffic on campus, and encouraging alternative transportation use, including electric cars.

The university also is home to Birmingham's largest solar-energy system. Because research labs can use three to five times more energy per square foot than offices or classrooms, and involve more solid waste, chemicals, and electronics, the university has launched a Green Labs pilot program to improve efficiency without sacrificing research quality, safety, or productivity.

> **The university's strategic plan offers a roadmap to prepare students and the community for the challenges of the current economy, including skills and fields like global literacy, biotechnology and biomedical science, energy, transportation, materials engineering, information technology, computing security, and entrepreneurship.**

The university collaborates with Alabama's Department of Environmental Management to address any environmental contamination on all building sites it acquires, and applies low-impact development principles in new construction projects. Because urban green spaces lower temperatures, improve air and water quality, and improve everything from local habitat value to public recreation, UAB is converting spaces like parking lots, roadways, and roofs into planted areas.

It's all paying off: a review of UAB's sustainability efforts by the Association for the Advancement of Sustainability in Higher Education (AASHE)'s Sustainability

Tracking, Assessment, and Rating System (STARS) earned the school a Silver rating.

The university's work to promote health and wellness is just as ambitious. As one of the nation's largest hospitals and academic medical hubs – serving over a million patients annually – UAB is home to prestigious centers for the study of cancer, neuroscience, AIDS, diabetes, and more, and excels at turning research into revolutionary therapies. The university is similarly well-equipped to support the mental and physical well-being of some 22,000 staffers and 20,000 students, through programs ranging from nutrition, to immunization and prescription services, to counseling. Students, faculty, and staff also enjoy access to many fitness options at the state-of-the-art recreation center, along with bike programs, gear rentals, and low-cost recreation trips to area destinations.

Another priority is ensuring a healthy campus environment, outdoors and in. In this endeavor, the university employs techniques from using native and disease-resistant plans and lowering use of pesticides on the campus grounds, to measures that improve indoor air quality. The school further promotes healthy habits through water bottle refill stations, weekly farmers markets, allergen-free food stations at campus dining facilities, and an app to check the calorie count for food items.

The university is making critical strides in offering effective environmental and sustainability education that incorporates STEM, civic skills, and green career pathways. The university's strategic plan offers a roadmap to prepare students and the community for the challenges of the current economy, including skills and fields like global literacy, biotechnology and biomedical science, energy, transportation, materials engineering, information technology, computing security, and entrepreneurship.

Currently, UAB offers 35 academic courses that integrate social, environmental, and economic sustainability issues with their subject matter. These courses are identified in the course catalog, and another forty courses are planned for designation in the next year.

In addition, the university offers baccalaureate-level minors in Peace, Justice and Community Health, and Environmental Science, and a master's degree in public health with a concentration in Environmental Health and Toxicology. The Sustainable Smart Cities master's program, offered in partnership with the United Kingdom's Staffordshire University, is an interdisciplinary professional postgraduate program covering the principles and technologies needed in cutting-edge urban planning.

Additional academic opportunities, including research and study projects, explore sustainability themes. For instance, interdisciplinary teams have participated for several years in the U.S. Department of Energy's Solar Decathlon, designing affordable, Net Zero, solar-powered homes built to withstand the southern climate and extreme weather. Faculty and students in the physiology and ecology departments are collaborating to investigate the chemical defenses of marine life in Antarctica and the role these could play in helping to prevent diseases.

The UAB Sustainability Fund, a joint project of UAB Sustainability and the Office of the Assistant Vice President for Student Experience, allows students to apply for grant funds for projects to improve UAB's sustainability and efficiency and decrease the university's overall ecological footprint, while also empowering students to show leadership and innovate. The annual Red Mountain Project trains faculty in ways to incorporate sustainability skills and knowledge in new and existing courses, in subjects as diverse as biology, English, engineering, nursing, business, and graphic design.

Through targeted policies and practices – and the cumulative effect of countless individual, everyday actions – UAB is realizing its vision for sustainability and proving what's possible.

California

Yosemite High School, Merced, Calif.

Green career pathways inspire students in California's heartland

Yosemite High School (YHS) is on the leading edge of the green schools movement in California's Central Valley. More than 94 percent of YHS students are "unduplicated pupils" in California's Local Control Funding Formula, a composite measure of need that includes students eligible for free or reduced-price meals, English learners, and foster youth. YHS serves the whole child with a coordinated school health approach.

Both mental and physical support staff are available to attend to

student health and wellness during school hours. Students have daily access to a registered nurse, a health aide, and a counselor. A full-time mental health clinician from Sierra Vista, an outside mental health agency, provides mental health counseling services and assists in psychosocial issues. Housed on the same campus as YHS, the District Opportunity Center offers intervention programs that address anger management and coping skills, as well as drug and alcohol intervention, with group activities, lessons, speaker presentations, and intensive individual interventions facilitated by a specialist. A support and education group is offered to students who are young mothers and fathers. The school's Urban Essentials program of restorative justice builds community in response to student misconduct, with the goals of repairing harm and restoring relationships.

Yosemite students are active outdoors in physical education, coursework including Physical and Agricultural Science, and during most lunch periods with activities presented by the school's leadership team. Staff lead after-school activities and interact with students in roles promoting physical fitness and health. The Valley Continuation Sports League, spearheaded by YHS and the Merced Union High School District, gives students opportunities to engage in basketball, volleyball, bowling, flag football, soccer, softball, and badminton on coeducational teams, with 82 intermural games each year.

Giving back to the community is an integral part of school culture at YHS. The campus is a leader in gallons of blood donated to BloodSource. School activities send homemade lunches and leftovers to The Men's Mission and D Street Homeless shelters. Donations to St. Vincent DePaul's, the Kids Against Hunger Project, and We Day - Free the Children demonstrate a commitment to helping others.

Students at YHS demonstrate the same care for their environment that they do for their community. The school placed first at a recent Energize Schools competition for their energy conservation plan, and have reduced greenhouse gas emissions 20 percent in two years. Students lead campus efforts to recycle leftover food and used paper to feed the school's worm farm. The byproducts from the farm, including castings and worm tea, return as fertilizers or in mulch for campus plants and horticulture projects. A collaboration with Tree Partners USA has helped YHS to select regionally appropriate plantings in an effort to reduce the heat island effect. A 45 percent reduction in campus water use over less than three years demonstrates incredible buy-in to the conservation efforts on campus.

Advocacy, social justice, and environmental justice are an integral part of the educational program at YHS. Students participate in field trips to the state capitol, where they meet with legislators to discuss laws and regulations on environmental issues and topics. Through civic engagement, students experience firsthand what it

means to act on the part of their environment—a critical building block for environmental literacy. Students have engaged further in local issues by participating in the "There Ought to be a Law" competition, which was hosted by State Senator Anthony Cannella. The 2016 entry from YHS focused on active transportation and Safe Routes to School, recommending lighted crosswalks in front of every California school where stop signs are not present within 900 feet of the main entrance.

The YHS campus features an outdoor classroom, raised garden area, and 500-square-foot greenhouse. The school has a composting center where breakfast, lunch, and snack time leftovers are collected, along with campus grass clippings, and fed into the composting bins daily. Nonacidic fruits, vegetables, breads, and foliage are delivered and used as feeder for the worm farm. Castings are used in the greenhouse, raised garden, and on plants around campus. Worm compost tea is diluted and fed to trees on campus. The school is working with the EPA Region 9 office to coordinate a food waste audit in early 2017.

The innovative Green Technology and Energy Conservation (GTEC) courses offered at YHS provide students with access to California's energy and power technology career pathways, and lead directly to industry certifications or employment opportunities. The GTEC curriculum is designed to fully integrate learning objectives that are critically relevant to the renewable energy and green technology industries. Model curriculum provided by industry partners helps prepare high school students for their industry exams. Introduction to Energy Conservation is a comprehensive survey course of the basics of energy. The course provides an introduction to energy concepts, energy efficiency, green building technology, and alternative fuels. Green Technology is an interdisciplinary course that integrates environmental and sustainability concepts across STEM, social studies, and the English language arts curriculum. The course uses hands-on interactive activities to engage students and help them understand how green technology is applied to our environment and how it helps make our communities sustainable. Students build reading, writing, and literacy skills analyzing laws and regulations that affect energy use, and discussing the effect these policies have on society.

A partnership with nonprofit organization GRID Alternatives engages about 50 students each year in 10 service learning work experience days. After learning

about solar technology and working with the demonstration solar panel on campus, students have the opportunity to participate in residential solar installations for low-income residents in and around the city of Merced.

Other extracurricular activities include a green technology club, wilderness club, and hiking club. Field trips provide hiking, camping, and overnight backpacking experiences in various locations and field trips to the Monterey Bay Aquarium. The school partners with the University of California, Merced and the Yosemite Leadership Program to connect students to outdoor nature lessons.

The Thacher School, Ojai, Calif.

Equine studies headline extensive sustainability practices

The Thacher School is a coeducational boarding high school perched at the foot of the Topa Topa Mountains in Los Padres National Forest near the community of Ojai. The school was founded in 1889 and covers 325 majestic acres—only 45 of which are developed—and 32 miles of trails. The campus is a National Wildlife Federation site that includes 25 acres of citrus and avocados that support the school nutrition program, rain gardens and Hugelkultur landscaping.

Thacher's tradition of helping students build a deep connection to nature is finding new expression along the journey to make the campus into a model of sustainability. Thacher has adopted the Whole-School Sustainability Framework (developed by the Institute for the Built Environment at Colorado State University and published by The Center for Green Schools at the USGBC) and aligned it to a sustainability action plan so that the school can tackle sustainability from all angles.

The school's sustainability plan identifies five pillars that represent Thacher as an institution and community: efficient use of resources, ecological curriculum, community connections, natural connections, and health and sustainability management. For instance, all physical projects are organized under the efficient use of resources pillar. Under the direction of an experienced and committed facilities manager, Thacher has accomplished many sustainable physical projects. In June 2016, a new solar farm went live, providing 92 percent of the school's electricity needs. All projects in the last ten years (three dormitories) were constructed to LEED Silver building standards.

Water conservation projects also have sprung up all around campus, including rainwater catchment systems, greywater systems in all of the dormitories, and xeriscaping projects on school grounds. From a 2013 baseline, Thacher has

decreased nonpotable water use by 44 percent and domestic water use by nearly 40 percent. Physical campus improvements also provide real-world environmental education opportunities for students. Many math, science, and humanities teachers incorporate the live data provided by building systems into their curriculum to start conversations around resource consumption and waste management.

Thacher's composting program, which includes horse manure, dining hall food waste, and green waste, processes over 1,600 tons annually. The product is used for soil augmentation and improves stormwater control. Thacher also raises pigs, which are fed from dining hall scraps. Last year, the pigs ate 2.5 tons of dining hall scraps. Waste per student decreased 48 percent in just one year. All cleaning products are Green Seal certified.

The school also has a bee program that helps to ensure a healthy bee population in the Ojai Valley, and allows the school to process and distribute honey. To ensure a good product, pollinator gardens have been constructed and maintained around campus. The school also started a chicken program in the past year. Eggs are gathered and used in the dining hall, while the chickens help the horse program by eating fly larvae; they also consume some green waste and food scraps from the dining hall.

By working closely with food service provider Bon Appétit, which features its own farm to school program, Thacher is committed to providing students, faculty, and staff with as many food products as possible that have been humanely raised or grown with the lowest environmental impact possible. For instance, 100 percent of the milk served is organic; the chicken is also 100 percent organic and free-range; all eggs are 100 percent humanely raised; and the seafood follows the guidelines of the Monterey Bay Aquarium Seafood Watch for sustainable fisheries.

All students are required to participate in three sports per year—one per athletic season. Sports teams meet five to six days a week for an average of 1.5 hours per day, most of which are outdoors. The school offers rock climbing as a sport during two of the athletic seasons. Students undertake training in the skills and safety systems required for single and multi-pitch climbs. They climb daily on the boulders and crags located on the school's property. They have the opportunity to travel to locations such as Joshua Tree National Park and the Sierra Nevada to camp and climb on weekend trips. Sensitivity toward the environment, group collaboration, and personal growth are integral to the curriculum. Thacher provides ample opportunities for students to spend time in the outdoors through the Extra-Day Trip Program, biannual self-propelled six-day expeditions into remote wilderness areas, participation in the A and B-Camper Training Program, and maintenance of the trails on and around the Thacher campus.

All students at Thacher are engaged in campus, local, regional, and global sustainability issues. Each incoming freshman student at Thacher is required to take a campus sustainability orientation as part of their official freshman orientation. The sophomore class continues their sustainability education by learning about and engaging in activism about sustainability issues related to the Ojai Valley community. As this program progresses, juniors have the opportunity to explore regional and national sustainability issues, while seniors focus on global environmental and social problems and their solutions. The school is beginning a partnership with education for sustainability expert Jaimie Cloud, of The Cloud Institute, to provide even more formal integration of sustainable principles into the school's curriculum. Currently, 25 course and program offerings integrate sustainability concepts in their instruction.

Thacher's Golden Trout Wilderness School, a remote campus in the southern Sierra Nevada, also is a valuable tool in introducing the concept of sustainable systems, connecting students to the relationship between communities and their environment, and encouraging students to consider environmentally oriented careers. Students employed or attending programs there are introduced to the complexities of a self-sustaining facility, and are responsible for maintaining the water, power, and waste systems that support the wilderness-centered campus. Former students have gone on to environmentally oriented careers such as resource management, forestry, wilderness medicine, and wildlife biology.

Thacher has an extensive equine program. Freshmen are required to ride and care for a horse their entire freshman year, and many upperclassmen continue to ride throughout their time at Thacher. They learn the basics of animal husbandry, horsemanship, and horse care. All of the riding takes place outdoors on the riding fields and on the extensive and rugged trail system in the mountains behind the school. Students ride in all but the most inclement weather. Instructors discuss the local ecosystem and mountains, and offer two six-day pack trips per year plus numerous weekend pack trips.

Thacher seeks to make strong and lasting connections with both individual and institutional members of the community. For instance, the school collaborates closely with the Ojai Valley Green Coalition in various projects around the valley,

and intends to continue solidifying this important relationship. One of the main goals for 2017 is to create a local consortium for sustainability in which participating schools share best practices, collaborate, and learn together. To that end, Thacher recently hosted a group of faculty and students from the Besant Hill School to start planning a small conference for students of both schools to explore leadership skills in the context of sustainability programs.

Culver City Unified School District, California

A Green5 culture of sustainability: reduce, reuse, recycle, ride, and rethink

Culver City Unified School District (CCUSD) is a vibrant and diverse community that includes five elementary schools, one middle school, one high school and one continuation high school with a total of 6,837 students. In addition, CCUSD is home to an adult school with 724 part-time students and a preschool with 282 students. In October 2010, the CCUSD Board created the Environmental Sustainability Committee (ESC) to help the district become more environmentally and fiscally sustainable, and foster an ecoliterate and globally responsible student body. The ESC comprises parent volunteers with knowledge and experience in sustainability and a passion to help the district.

In 2011, the ESC facilitated a third-party baseline energy audit of the school facilities, created a sustainability master plan for the school board, and began working on bringing a 750 kilowatt solar photovoltaic system to the district's main campus—where the comprehensive high school, middle school, and one elementary school are co-located—to reduce the district's carbon footprint and raise money for the general fund. As of February 2014, the solar panels accounted for approximately 82 percent of the energy needs of the three schools, deliver over $500,000 back into the district's general fund each year over the life of the system, and avoid approximately 2,326 tons of greenhouse gas emissions annually. CCUSD also retrofitted all lights with LEDs (light-emitting diodes) and all toilets and urinals with low-flow fixtures. The district achieved a 29 percent reduction in greenhouse gases and a 20 percent reduction in water use in just three years. In 2014, CCUSD received an EPA rebate to replace two old diesel-fueled buses with new, cleaner, low-emission buses, reducing emissions by over 90 percent. Maintenance crews and middle and high school custodians use electric vehicles to get around the campuses.

During the 2011–12 school year, the ESC launched the Green5 co-curricular sustainability education program to increase awareness amongst students and staff about recycling; reducing waste, energy use, and water consumption; reusing

materials; engaging in active transportation; and rethinking local solutions to global problems. The Green5, also known as the "Five Rs" (Reduce, Reuse, Recycle, Ride, and Rethink), was piloted at Linwood E. Howe Elementary School, and included recycling audits, surveys, a campuswide recycling program, signage and other messaging, and the establishment of a student leadership program. The post-audit findings showed recycling rates increased by 500 percent, and sustainability awareness amongst the students and staff also increased substantially.

During the 2012–13 school year, with support from a CalRecycle grant, CCUSD's ESC brought the Green5 recycling and sustainability education program to all five elementary schools, with the addition of food waste composting across all five campuses. In 2014, CCUSD received a second CalRecycle grant that enabled the district to transform Green5 into a districtwide program, and purchase durable custom-designed sorting stations for the middle school, high school, Culver Park continuation high school, adult school, and the Office of Child Development. In addition, the grant provided funding for a sustainability coordinator to develop and manage the program. This position is now funded directly by the district's general fund. Since 2014, the amount of materials being sent to the landfill by CCUSD has been reduced by more than 50 percent, for a districtwide diversion rate exceeding 80 percent. Districtwide, an estimated 29 tons of mixed recycling is diverted from the landfill each year, which is the equivalent of 100 metric tons of greenhouse gas emissions avoided, while 935 tons of compostable food waste is diverted from the landfill each school year, which is the equivalent of 823.5 metric tons of greenhouse gas emissions avoided.

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The Green5 districtwide program now includes: annual school assemblies; student leaders at each school site; sustainability staff liaisons (teachers and administrators) who support the Green5 program at each school site; trainings on energy and water auditing and waste reduction analysis and techniques; annual districtwide recycling competitions; districtwide administration, analysis, and dissemination of the My Actions Count Survey three times each year; a robust Safe Routes to School-sponsored Walk and Rollers Program (known as the fourth R in Green5) with growing participation; an expanding partnership with Culver CityBus Green Fleet; an award-winning food program; and a civic engagement program focused on reducing food waste and sharing food with local families in a backpack program. Also under the Green5 umbrella, there is an air quality program, a green cleaning pilot, and a mindfulness pilot underway, as well as edible and learning gardens in every school, among other initiatives.

The district was an early adopter of California's Education and the Environment Initiative (EEI) curriculum, and provided training to a cross-section of CCUSD teachers in 2011. Although only a subset of teachers are currently using the EEI in their classrooms, CCUSD is considered an EEI Deep Implementer School District. CCUSD is looking forward to adopting new statewide textbooks in 2018 that will integrate the EEI curriculum across grades and subject areas. Currently, CCUSD has three environmental studies courses that have been approved by the school board.

All elementary students have garden class as part of formal instruction. At the middle school, all students are eligible to participate in the Edible Garden Club and the Butterfly Garden Club, where they spend time tending to their gardens for one hour every Friday. The Green Thumbs Club at the high school also is open to all high school students and is student-led. There are seasonal farmers markets at all schools. The high school incorporates their harvest into the school lunch program. The district offers a science camp on Catalina Island, students participate in coastal cleanup, and some grades engage in raising Trout in the Classroom.

CCUSD holds all physical education classes outdoors except in rain, and offers a K-9 rescue dog care and training after-school program. Free annual eye exams and dental exams are given to all children, unless their families opt out. Flu shots also are offered to all students free of charge. Each school site has a school nurse or health aid onsite at all times. Each elementary school also has either a full-time or part-time school psychologist as well as a school counselor. The Sandy Segal Youth Health Center, located between the middle and high schools on the district's main campus, provides free quality health care for hundreds of Culver City youth each year, along with supportive services and health education benefiting entire families. In addition to 30 minutes of physical education every day, all elementary schools have a total of 60 minutes of recess for free play in outdoor spaces.

In June 2016, the school board passed an Environmentally Preferential Purchasing Policy and Administrative Resolution. The board currently is considering the adoption of a Green Operations board policy, which includes a commitment for advancing ecoliteracy. The elements of this policy include commitments to reducing waste, creating energy and water efficiencies, sustainable procurement and transportation, a healthy food program, and ecoliteracy. One teacher and the district sustainability coordinator attend the Green California Schools Summit annually.

The district is fostering a culture of sustainability. When people visit district schools and see solar arrays, award-winning custom-designed sorting stations, Green5 banners, and environmental posters, they know the district embraces the responsibility to create a more sustainable world. CCUSD students and staff have

cultivated a habit of practicing the Five Rs, and an understanding of their positive influence as a collective community.

Montecito Union School District, Santa Barbara, Calif.

A comprehensive sustainability plan supports efforts across the three Pillars

Montecito Union School District (MUSD) recognizes students as the future stewards of the environment and prepares them to be environmental advocates. In 2011, with foresight, the Board of Trustees in this single-school district approved a sustainability plan that set the stage for school greening efforts. A compilation of this work is offered publicly via the school's webpage as a resource to assist any school on its sustainability journey. The sustainability achievements of MUS earned the school California Green Ribbon Schools recognition in 2015 (Bronze Level) and 2016 (Gold Level).

Efforts and successes guided by the sustainability plan's objectives have reduced environmental impact and costs and taught the community that the health of our planet is interwoven with our own well-being. The plan has been an invaluable guide for sustainable systems and has helped MUS focus on improving composting and recycling efforts at lunchtime, invigorating the environmental education curriculum, and building partnerships in the community. Conservation and future grid neutrality are ideas found in the MUS Facilities Master Plan (2012– 15), while environmental stewardship is a core value in the MUS Board's strategic plan.

This two-time California Distinguished School (2014, 1997) consists of older buildings and a vintage infrastructure. Funding from the California Clean Energy Jobs Act (Proposition 39) jumpstarted a high-efficiency LED lighting retrofit. Low-emissivity safety film installed on windows in 2015 also helps with energy conservation. The school has an ENERGY STAR Portfolio Manager baseline score of 81, and has reduced water usage by over 30 percent in four years.

MUS students are engaged in environmental learning every day, with schoolwide assemblies that encourage and support thoughtful management of resources, lunchtime waste diversion, a student-run campuswide recycling waste audit, and leadership roles for Tech Club students who teach peers about online paperless document management. These activities have led to a nearly 67 percent diversion rate. This year, a green- themed yearbook proudly shares greening efforts with the school community. Students participate in a primitive living skills day, pioneer days, and a weeklong outdoor camp, in addition to field trips to a nearby aquatic center, botanic gardens, county fair, and farms. The school's Parent Teacher Association

supplements environmental education curriculum by supporting an annual Earth Day celebration that includes hands-on green experiences from local businesses, nonprofits, and the University of California, Santa Barbara.

The school cafeteria is equipped for scratch cooking, and offers freshly baked whole grain breads and granola daily. Over 90 percent of produce is organic and local. Each student has a full five hours of self-directed outdoor recess play time per week. The school is a registered Sunwise sun protection program participant, and has an integrated pest management (IPM) program in place. The administration gave all staff members insulated lunch bags, salad shakers, and pedometers to encourage healthy habits.

A garden club has met weekly for over ten years. Students weed, plant seeds, cut flowers, and harvest vegetables. Special programs, such as "Cool the Earth," help to build student and parent environmental awareness. A schoolyard master plan aims to foster natural play by designing and building biomorphic forms and landscape, incorporating use of native plants, and reducing water needs by using drought-tolerant plants. Natural materials are used to reduce plastics and harmful materials.

The science program is transitioning to the California Next Generation Science Standards by integrating environmental literacy components. The fifth initiative of the school's sustainability plan is to embed California's Environmental Principles and Concepts into the curriculum in order to support MUS students in developing the knowledge, skills, and dispositions to become responsible stewards of the Earth. Students no longer just study animal adaptations, but instead are posed the question, "How do we, as scientists and engineers, support our local wildlife through the drought?" Students then generate the questions they have about local wildlife, habitats, survival, effect on humans, and the effects of the drought. Those questions are answered through research, labs, and a partnership with the Santa Barbara Wildlife Care Network.

The increased numbers of students and families walking to school regularly are proof that sustainability values are growing at MUS. The school's Walk 'n Roll program started in 2010 in collaboration with the Safe Routes to School local director, the MUS school superintendent, the Green Team, and the MUS Transportation Safety Task Force. Reducing environmental impact from cars is the

foundation of the program. The monthly PTA (parent-teacher association) newsletter and the principal's weekly notes consistently encourage walking, biking, and carpooling to school. Throughout the year, students are credited for walking or biking. The school's PTA offers fun incentives for student participation, including custom bag tags developed specifically for the program. A federal Safe Routes to School grant funded the San Ysidro Road Path to school, which opened in 2012.

Redondo Beach Unified School District, California

High performance buildings and ocean-friendly grounds host sustainability learning

The Redondo Beach Unified School District (RBUSD) consists of eight elementary schools, two middle schools, one high school, one continuation school, and one adult school, together serving approximately 10,000 students of diverse backgrounds. RBUSD ensures student and staff safety at school and in the home, promoting excellence in teaching and learning in modernized school facilities that provide model learning environments, maintaining high academic expectations for all students, and enhancing partnerships with the larger community.

Over the past ten years, two local bond measures have allowed RBUSD to upgrade and enhance buildings, grounds, and technology at every site. Many new facilities are LEED-certifiable or -certified, including the Lincoln Child Development Center's Project Frog building; as well as the student services building, student union, and gymnasiums at Redondo Union High School. The district maximizes the use of natural materials and resources, including recycled fibers and wood, in its construction. Each school campus has solar shade structures, minimizing RBUSD's carbon footprint and saving money on the district's bottom line. The district has 12 ENERGY STAR certified buildings, with all schools ranking above 85 in Portfolio Manager, and several in the high 90s. It also has reduced greenhouse gas emissions 47 percent in four years, and fifty-eight percent of the district's energy is obtained from onsite solar. All sites have retrofitted to T-8 lights and added lighting sensors.

Students in first through eighth grades are responsible for monitoring and sorting compost, recycling, and trash every day during lunch. Students attend Grades of Green assemblies that teach them the effect of their trash on the environment, as well as ways to reduce trash drastically by making small changes. Schools have embraced Trash Free Days, when students are encouraged to bring waste-free lunches to school. The district has implemented a one-to-one laptop program to further reduce waste.

Redondo Beach Unified School District has committed to good air quality by ensuring adequate ventilation, and adheres to all EPA guidelines regarding mold remediation. All cleaning products are certified green, an IPM policy is in place, and many campuses have incorporated solatubes to increase daylighting. Every elementary school in RBUSD has a valet system for student dropoff and pickup that keeps traffic moving, to help improve outdoor air quality and student health.

Beach Cities Health District, a local preventive care agency and strong community partner of RBUSD, provides the district with a number of resources to advance wellness for students and staff, including fitness classes, nutrition education, and mindfulness and purpose workshops for RBUSD staff and families. They also offer a comprehensive nutrition education program through the LiveWell Kids Nutrition Program learning modules, and physical education specialists in grades kindergarten through five. Elementary students and staff practice MindUP™, a research-based training program that teaches students to self-regulate behavior and engage mindfully in the focused concentration required for academic success. The RBUSD nutrition program participates in the U.S. Department of Defense Fresh Fruit and Vegetable Program, using entitlement monies to purchase fruits and vegetables from locally approved produce vendors. All schools participate in International Walk to School Day, and most elementary schools have embraced recess before lunch in their schedule, leading to less food waste and more activity.

Every kindergarten through 12th grade school has received recognition from the Alliance for a Healthier Generation, with one school recently reaching gold level.

The district has focused on improving nutrition and wellness services to meet or exceed standards set forth by the Alliance for a Healthier Generation's Healthy Schools Program. Specifically, RBUSD improved food services' offerings of low-calorie, sugar-free, and low-fat foods and beverages, and replaced vending machines with healthier options. All school cafeterias are Blue Zones approved by Beach Cities Health District. Every kindergarten through 12th grade school has received recognition from the Alliance for a Healthier Generation, with one school recently reaching gold level. Each school in RBUSD has established a wellness committee that plans and encourages healthy behavior among all stakeholders, including the implementation of staff wellness challenges, partnerships with area gyms and fitness centers, and an employee wellness challenge that has introduced employees to new types of exercise, and introduced new activities and healthy foods throughout the community.

All elementary schools have a school garden, and the high school has a native garden, all of which are used as outdoor classrooms to bring greater understanding of the local ecology and environment. Students create service learning projects that continue to influence daily habits, such as plastic reduction, consciousness about

waste, and trash sorting. All students in fifth through eighth grades have the opportunity to attend an outdoor science school. The principles and priorities of Living Schoolyard Month have become an integral part of the student experience in RBUSD. Student-led awareness campaigns and activities bring about environmental awareness while celebrating the natural habitat.

Environmental and sustainability concepts receive particular attention in the Advanced Placement (AP) Environmental Science course for grades 11-12) as well as in Geoscience, taken by tenth graders. Critical issues such as climate change and conservation are explored in both, with the AP students further exploring the relationship between natural and human communities. Student teams have completed needed calculations; researched viable solutions; designed gardens; and created videos, presentations, and posters, and written articles and editorials to communicate their sustainability projects to the school and community. At one school, an ocean friendly garden, constructed using reclaimed water and California native plants, was installed with the assistance of West Basin Water District, using funds donated by Chevron. The freshwater pond is used to teach ecology, water quality, population studies, and biodiversity outdoors.

Colorado

Sedalia Elementary School, Sedalia, Colo.

Eco-leaders cultivate sustainable practices in a 1958 building

Sedalia Elementary School's earned the school the Eco-Schools USA Green Flag Award in 2014. As a rural Title I school, in a facility built in 1958, serving a student population of which 53 percent are eligible for free and reduced-price lunch, Sedalia regularly overcomes significant challenges to sustainability. Student behavior has changed the way the school community thinks. Students' positive practices continue long after they graduate from Sedalia, as they work to bring environmental awareness to their middle schools and high schools, and live more sustainably at home.

Sedalia's students in kindergarten through sixth grade follow an effective recycling program, divert food waste from the cafeteria to chicken coops, and practice composting and vermicomposting, leading to a 70 percent recycling rate. Students know the recipe for compost, and claim, "It is like magic to watch it turn into food for our plants." Sedalia's reuse centers throughout the school put hard-to-recycle items to innovative use. Students and parents are fascinated with the games students have built from these saved items, including an arcade and sustainable car derby for the annual carnival. The playing field is artificial turf, eliminating the need for watering, and the playground has recycled tires for play mulch. Most of the

remaining landscaping around the school is rock, leaving only a small amount of irrigated turf on the property. All gardens are handicapped-accessible, so all students can enjoy them.

The student-led garden team cultivates vegetables, herbs, and even fruit trees using hugelkultur (raised-bed) gardening, which uses a limited amount of water. The pollinator garden contributes to biodiversity, and students love seeing the variety of pollinators and enjoy the beauty of the flowers. Multiple outdoor learning spaces are used regularly to ensure students learn in nature, including a chicken coop that students visit frequently during class and for fun rewards. Having animals at school improves mental health, and creates opportunities for compassion, relaxation, and responsibility.

Despite the challenges of reducing energy in an aging building with large expansions and few upgrades, Sedalia has managed to cut energy use by six percent, largely through student-initiated efforts. Solatubes and recycling bins are in every classroom. Classrooms participate in an energy reduction incentive program, led by fifth and sixth graders, with rewards given at various levels when students turn off docking stations and lights. A fifth grader led a bake sale that raised over $400 for solar chargers for small electronics to help reduce energy use.

Through the use of a healthy schools coordinator, Sedalia addresses health and wellness through a wide range of programming across grades. Students are engaged in physical activity outdoors, including through a Gaga Pit and Nine Square in the Air, working in the garden and hoop house, playing with the chickens, and participating in activities in wide open spaces. Students collaborated to create a sensory board made entirely of pallets, and reused materials for students with special needs. This wall is used every day, and has helped students get back on track when they need a mental break. A sixth grader wanted to expand access to physical activity to students because her research showed that 50 percent of children do not get enough exercise. She now leads a weekly after-school exercise program that will be passed on to another student when she graduates. She also is working on a no-idle zone for the parking lot, and helps remind students and teachers not to use junk food as a reward.

The foundation of Sedalia's culture of sustainability lies in a Sustainability Special class, which provides environmental education to each student in every grade. Through this class, students engage in project-based learning addressing sustainability pathways such as waste and consumption, energy conservation, sustainable food, and health and wellness. Students participate in the Global Learning to Benefit the Environment program as citizen scientists uploading data from field investigations to be used by NASA, the National Science Foundation, NOAA, and other federal agencies. In addition, Sedalia students have been a part of the "Create Something Great" expo in the Douglas County School District, a 2013 U.S. Department of Education Green Ribbon School District Sustainability Awardee, where they have highlighted the work they have done around sustainability. They participate in a three-day / two-night outdoor education program in sixth grade, and serve on Eco-Leadership teams. Students have the opportunity to sell their own produce and collaborate with local farmers during their weekly produce stand.

Colorado Mountain College, Glenwood Springs, Colo.

Sustainability reaching its peak on the Western Slope of the Rockies

Colorado Mountain College (CMC) is a comprehensive local district junior college with authorization from the Colorado Commission on Higher Education to provide baccalaureate degrees in certain areas, including Sustainability Studies. Founded in 1967, CMC now serves approximately 22,000 students at 11 instructional sites annually, three residential and eight commuter, across a service area of over 12,000 square miles—larger than the state of Maryland—and including nine counties across Colorado's Western Slope. Students served range from first-time college students out of college to senior citizens returning to learn new skills. Each CMC campus uses its own budget creatively to develop solutions to meet the sustainability and wellness goals of its constituents.

Since 2009, CMC has made reducing its environmental impact a major strategic goal of the institution. This was formalized in 2009 with CMC becoming a signatory to the American College and University Presidents Climate Commitment. Since that pledge, CMC has focused its environmental efforts on three major areas: 1) reducing its carbon footprint through direct action; 2) integrating sustainability into all institutional operations; and 3) using its position as an educational institution to teach students and community stakeholders about the changing nature of our surrounding natural environment. CMC is a member of the Sustainability Education and Economic Development Center, and has partnered with the Clean Energy Economy for the Region, a nonprofit organization dedicated to assisting communities,

governments, businesses, and households in western Colorado in developing clean energy solutions.

Colorado Mountain College focuses on collaborative efforts with communities to expand alternative energy offerings throughout its district, and has increased its reliance on alternative energy for heating, cooling, and electricity. Using 2009's energy consumption as a baseline, as of 2015, CMC has reduced its energy usage by 13 percent institutionwide, and invested approximately $3.2 million in building improvements to improve energy efficiency across all campuses during the same period. Some highlights of these efforts include the installation of solar farms and geothermal systems on several campuses, including at one particularly challenging high-altitude site; upgrades to HVAC systems, lighting, and insulation; and the addition of motion sensors. In 2010, a policy of building to ENERGY STAR or LEED Silver standards was implemented and, since 2013, the institution has tracked the use of vehicles for institutional purposes as part of its overall carbon emission calculations.

The school has several unique challenges in managing its water quality and usage.

Its campuses are located in climates ranging from high alpine to high desert, at altitudes ranging from 10,152 to 5,348 feet. Nevertheless, the college has undertaken initiatives to mitigate water use, including xeriscaping at all sites with native plants and the use of nighttime watering where necessary; extensive landscaping changes to reduce the need for irrigation; the installation of low-flow toilets, waterless urinals, and faucet motion sensors; and the installation of water bottle filling stations at all sites.

Waste reduction efforts are site-specific, but all have made great strides to reduce solid waste and food waste, with efforts such as single-stream recycling; plastic and glass recycling; composting; participation in a local Food Recovery Network to donate unused human-edible food to local nonprofits in the region for use; and an organic recycling program in collaboration with a local pig farmer. Since 2008, the institution has maintained an e-waste recycling and reuse program, with local eligible nonprofit organizations or governmental entities such as local school districts offered surplus electronic items the institution has phased out.

Despite the limited mass transportation available around the rural CMC sites, the College has implemented several initiatives to encourage use of alternative transportation. Six of the 11 sites have electric vehicle charging stations. The institution partners with local municipalities in order to offer shuttle stops and bus service on a few sites. Since 2013, each April the institution holds a monthlong alternative transportation event for its central services staff to bike, walk, or ride public transportation to reach their offices, with participation encouraged through a series of small-prize drawings for locally donated gift cards. The institution also regularly promotes walking and biking as healthy activities during the warmer months through staff healthy lifestyles emails. Since 2009, the institution has used a video conferencing system to reduce the number of physical presence meetings required by staff and faculty, allowing staff members at different sites throughout the institution to meet without having to use personal vehicles and reducing the institution's overall carbon impact.

In addition, CMC has invested throughout its campuses and central offices in state-of-the-art HVAC systems, as well as green cleaning products to protect human health and the environment. The facilities department actively pursues air quality testing to maintain humidity levels below 60 percent, test for proper ambient temperatures, and ensure proper airflow and purity at each site. CMC conducts radon level testing during construction or renovation projects. The college maintains a tobacco-free environment within all campus facilities and central offices; actively works to prevent any growth of mold throughout its facilities locations; and maintains carbon monoxide alarms.

The college has implemented a variety of initiatives to promote health, focusing especially on the three residential campuses. Efforts include a co-ed college ski team; a ropes course; and a student-run outdoor mountain biking club supported by CMC's outdoor education program. Efforts to improve health and campus climate also include the provision of mental health specialists, physician assistants, and professional counselors at various sites, as well as coordination with local community clinics.

The school community benefits from locally grown produce with an emphasis on organic produce where possible, and the school offers a monthly nutritional education menu feature. Community gardens, including a forest garden, are maintained at two campuses for use by students and the community. On another campus, a greenhouse, using modern sustainable production and growth methods, operates as a student/faculty collaborative project, providing organic high-quality vegetables year-round for use on-campus and by local restaurant. The college also supported the formation of a student beekeeping club and the establishment of four hives.

Ecological and sustainability issues are a core part of the curriculum, in such ways as encouraging faculty to address such issues in coursework and offering degrees that focus on environment and sustainability, from the occupational certificate to the baccalaureate level of education. The centerpiece of these efforts is the new bachelor of arts degree in sustainability studies, one of the first two bachelor's degrees offered by CMC, which blends classroom instruction with experiential education.

Also offered are two associate of applied science degrees with an environmental focus: the natural resource management and environmental science programs. CMC's natural resource management program focuses on hands-on experiential education designed to develop students' skills in a variety of environments, including high alpine forests, high alpine meadows, riparian areas, and wetlands, and successfully has placed students in internships with various state, federal, and private organizations to develop their academic skills into functional career skills. CMC's environmental science program centers on a broad STEM approach with coursework in biology, chemistry, and geology, all of which is focused on environmental problems and biological and ecological approaches to addressing them. Finally, CMC offers a popular technical training program in solar energy with three certificates: basic solar photovoltaic, photovoltaic installer, and solar thermal installer.

Other classroom instruction focuses on integrating STEM disciplines such as biology and ecology with humanities and social sciences, including philosophy, ethics, and social justice. The college also focuses on integrating business practices with social justice and proper environmental stewardship concerns. In ecology and sustainability educational offerings, CMC faculty focuses on expanding their use of experiential learning opportunities. The school is committed to offering 21st century degrees in sustainability that educate students on challenging environmental issues facing the modern world, and give them the tools to be powerful advocates for effective environmental policies.

Connecticut

Moriarty Environmental Sciences Magnet School, Norwich, Conn.

Raising diverse students to make mindful choices for our environment and health

Moriarty Environmental Sciences Magnet School is a kindergarten through fifth grade intra-district magnet public school located in Norwich, a small city in eastern Connecticut. The school serves 418 students, who come from at least 13 different cultures and speak no fewer than seven different languages. The school consists of

64 percent minority students and 17 percent English language learners; 71 percent of the school population is eligible for free and reduced-price lunch.

Moriarty seeks to create in its students passionate environmental stewards and collaborative problem solvers who understand the importance of sustainability. As compassionate and culturally competent community members, students take action to influence local and global issues in a powerful way. "Making mindful choices for our environment" is incorporated into the school's tagline. Highlights of progress over the last three years include: curriculum changes, health and wellness practices, and the addition of inspiring outdoor classroom spaces.

One of the school's greatest accomplishments has been the creation and inclusion of outdoor learning spaces into the curriculum. These include a community garden, natural wildlife habitat, local bodies of water, a butterfly garden, sidewalk gardens to create more permeable surfaces, and an outdoor classroom pavilion. Building the environmental education curriculum was a process that has yielded great results. Throughout the school grounds, students are engaged in seeking answers to their questions through cross-curricular inquiry units.

Kindergarten students have become ornithologists, studying schoolyard birds, reading and writing about birds, observing the birds, receiving a visit from the Connecticut Audubon Society, and ultimately installing a birdbath in the school garden. First grade students read and investigate Monarch butterflies, designing their own Monarch meadow. Third grade focuses on bees and their role in ecology and second grade focuses on botany and nutrition. Fifth grade students learn to test water for dissolved oxygen, pH, turbidity, biodiversity, temperature, and salinity. They apply these skills to local bodies of water and determine the water quality of each location. They read about water issues, sewage treatment plants, and methods to clean water and design water filters using the engineering design process.

Along with the district's active energy management of the school, there is an after-school club that worked with Norwich Public Utilities to do an energy audit. This

group used the results to make suggestions to reduce the school's energy use, including removing old TVs and refrigerators, setting back hot water temperatures on thermostats, and turning off Smart Boards and projectors when not in use. Over the past year, the same student club also did a schoolyard survey and found that the landscape is predominately impermeable surfaces. Students investigated various surfaces, and ultimately designed and created a rain garden for the entrance to the building.

Making mindful choices is demonstrated through health and wellness efforts as well. The school works closely with Food Corps, Norwich Public Schools Food Service, and FRESH New London to ensure the school both teaches about proper nutrition and provides healthy food and drink options to the students. The district has a processing kitchen, and is able to source about 50 percent of school food with locally farmed fruits, vegetables, and dairy. First grade is doing a yearlong inquiry on My Healthy Self, and second grade is learning about eating locally, seasonally and farm to table. Both grades learn about nutrition, growing food, and preparing healthy meals. All fourth and fifth graders take part in Health Lab, a curriculum written in collaboration with the local hospital to teach about nutrition and body systems. Students explore fats, proteins, carbohydrates, and the digestive system, through interactive hands-on labs. Instead of cupcakes, a birthday student will get to pick to be line leader, add an extra five minutes of recess for the class, pick a special lunch seat, or eat lunch with the teacher.

The students spend about 30 percent of their day outdoors with recess, physical education, and learning in the outdoor classroom. They also participate in brain breaks, and staff members have opportunities to practice yoga and meditate. The school has a no-idling policy, and participates in the EPA's outdoor air quality flag program. All cleaning products are certified green.

Moriarty's composting and recycling program, which is estimated to divert about 35 percent of waste from the landfill, was featured in the local newspaper as an example for other schools, demonstrating that recycling can be built into the lunch program, with little to no cost, while teaching students sustainability concepts. Third, fourth, and fifth graders run the recycling and composting program at lunch and help younger students determine what foods can be composted and recycled. They also come up with innovative solutions to recycling problems, such as advocating for the purchase of strainers to separate uneaten cereal from recyclable containers.

Moriarty staff members have received professional development through Project WET, Project WILD, Schoolyard Habitats, School Gardens, Monarch Recovery, statewide environmental training, and Project Learning Tree. Moriarty's green team is made up of teachers, paraprofessionals, fourth and fifth grade students, custodial staff, the magnet theme coach, the principal, and Food Corps members. In fall of

2016, Moriarty was certified as a bronze level EcoSchool USA for its schoolyard habitat.

Delaware

Forwood Elementary School, Wilmington, Del.

A leader corps guides down the pathway toward school sustainability

Forwood Elementary School, in collaboration with the Delaware Valley Green Building Council and Eco Schools USA, a National Wildlife Federation program, is going green. Guided by their Green Team, which was formed in 2015, the school's objective has been to develop habits among students and staff that improve well-being and protect the environment.

A journey that began with the raised bed garden project of an Eagle Scout and Healthy Foods for Healthy Kids contributed to Forwood's embarking upon Eco School's sustainable food pathway. Every student from kindergarten to fifth grade has had a role in the Forwood garden education program, from planting seeds to watering and harvesting. Each role was linked to lessons that were relevant to the grade level science curriculum. Cafeteria staff serve salads made from freshly picked produce on the lunch line. Garden programs are funded by a Whole Kids Grant, sponsored by Whole Foods and a donation made by the Wawa Corporation.

> Students and staff planted orange milkweed, baptisia, dwarf honeysuckle, and other flowering plants to attract and feed pollinators.

Students learn about maintaining healthy lifestyles in 4-H after-school programs facilitated by the University of Delaware College of Agriculture and Natural Resources Cooperative Extension. Representatives from the Cooperative Extension also evaluate soil samples for Forwood's gardens. Master gardeners share their expertise at the school's fall festival, part of the Green Apple Days of Service.

The school implements an IPM plan and has a comprehensive green cleaning program in place. Students can participate in a twice weekly walking club year round.

Educated by the Delaware Solid Waste Authority and supported by Brandywine School District Facilities Management and Nutrition Services departments, Forwood's fifth grade leader corps has prompted the entire school to recycle. While paper has been recycled at Forwood for a number of years, a fifth grade field trip to the DSWA helped students better understand the need to recycle more. The leader corps completed an audit of trash and identified that plastic water bottles and milk

jugs could be recycled fairly easily. Students began recycling plastics in spring 2016.

Delaware Nature Society provided integral support to Forwood staff as students and staff planted orange milkweed, baptisia, dwarf honeysuckle, and other flowering plants to attract and feed pollinators near the building entrance. Forwood has been recognized as a Certified Wildlife Habitat by the National Wildlife Federation. Garden plans are expanding to a sensory garden that will use textured native plants and art. These low maintenance gardens provide natural models to enhance student learning.

Forwood has reduced energy consumption and educated students and staff about renewable forms of energy. The University of Delaware supported district facilities staff with an energy audit of the school in August of 2015. Later, Practical Energy Solutions educated the fifth grade leader corps on tools to gauge energy efficiency in the building, and met with fourth grade students to share information on energy conservation and renewable forms of energy supporting grade level science content. The leader corps is creating a video to educate students and their families about saving energy.

Forwood uses State of Delaware science curriculum, including FOSS Science kits for soil, insects, land and water, ecosystems, and structures of life. The reading curriculum includes multi-grade level access to gardening and science-related topics. Students sort their trash into recyclables, compostables, and landfill trash at home, as was modeled at school. They create bird feeders from recyclable materials, make solar cookers, and design cars that move with wind power. They evaluate energy use at home and have taken steps to make reductions.

F. Neil Postlethwait Middle School, South Camden, Del.

Outdoor learning space improves ecosystem learning

In 2010, teachers at Postlethwait Middle School established an Eco-Team to give environmentally conscious and motivated students an outlet to share their ideas to make a difference in the school and community. The group meets monthly and discusses ideas they have to make the school, campus, and students more environmentally friendly. Teachers, administrators, maintenance staff, and Eco-Team feel a sense of urgency to continue improving their environmental practices in the future. Through proper planning, collaboration, and innovative thinking, Postlethwait will make this green vision a reality.

Postlethwait is part of a districtwide energy audit to collect data about energy consumption and cost, which will be used to create a comprehensive energy management plan for the school. In the meantime, students are gathering energy and cost data; as lightbulbs burn out, they are being replaced with LED lightbulbs; power strips in each classroom avoid waste; and geothermal energy used to run the kitchens, hot water heaters, and back-up generators at schools. To conserve water, the school is equipped with low-flow water fixtures, and maintenance plans are in place to make sure faucets and fountains are clean and safe for students and staff. The school's campus includes an outdoor educational area with a water catchment system to ensure that rainwater is flowing to areas where it can be absorbed and filtered naturally rather than into storm drains. In recent years, Postlethwait has conducted trash audits, resulting in upcycling, recycling, and the addition of a compost barrel.

In recent years, efforts have been taken to make sure that all hazardous materials have been removed and other chemicals are labeled and stored properly. Students are offered a wide variety of fruits and vegetables in the cafeteria. Postlethwait's campus includes food gardens, not only to help students understand where their food comes from, but also to produce enough food in the future to supply the school cafeteria. Students participate in physical education classes daily for a semester of the school year. Postlethwait also offers three seasons of sports to keep students physically active.

The school features an outdoor classroom, complete with a learning deck. This area allows students to get outside and make connections between the environmental science content they learn as part of the Delaware Science Coalition curriculum and the natural world around them. They make observations about nature, pose questions, and gather information to explain these natural phenomena. As part of the Delaware Science Coalition curriculum, seventh grade students engage in a unit called Delaware Watersheds, and use this outdoor space to explore the water cycle and how water moves differently through various kinds of earth materials. In eighth grade, students participate in a unit called Populations and Ecosystems, during which students use the outdoor classroom to explore how organisms are interconnected in ecosystems, and also to observe the adaptations that the organisms living within a given ecosystem have to help them survive.

In 2016, the Caesar Rodney School District was awarded the NOAA B-Wet Grant, which provided funding to update and expand the outdoor educational spaces at

three of the district's school, including Postlethwait. As part of the grant, Postlethwait will be one a few middle schools in the state of Delaware to pilot Meaningful Watershed Educational Experience lessons. These lessons, created by the Delaware Department of Natural Resources, not only involve students going outside to learn in outdoor educational spaces at the school, but will culminate in a naturalist from an environmental state agency coming to lead students in an environmental science lesson.

U.S. Department of Defense Education Agency

Tarawa Terrace Elementary School, Tarawa Terrace, N.C.

Natural disaster brings together a powerful sustainable school community

Housed on Marine Corps Base Camp Lejeune, a 246-square-mile United States military training facility, Tarawa Terrace Elementary School (TTES) was originally named Tarawa Terrace 2 Elementary School (TT2). Its current building was completed in October of 2001, and in April of 2011, a tornado struck the neighborhood of Tarawa Terrace, which housed a second school, Tarawa Terrace Primary School (TT1). This school was damaged beyond repair, and thus TT1 students and staff finished the remainder of the school year at TT2. These two schools merged, and began the 2011-2012 school year as TTES, serving prekindergarten through grade five.

From the school's mascot, the tiger, which is among the most endangered species on the planet, to resource management that emerged stronger after the catastrophic natural disaster that destroyed homes and displaced students, to the features of its feeder school building, the TTES community is keenly aware of humankind's interdependence with the natural world. In the aftermath of Mother Nature's fury, the school had an addition built under a compressed schedule to house the displaced students from TT1 and alleviate the crowding in a building not suited to handle the overflow. The new wing construction gave TTES over 40,000 additional square feet of space, and provided resource-efficient upgrades that were certified LEED Gold in 2014.

The construction took place with children onsite and provided a unique learning opportunity. Students were able to see not only the power of nature, but also the responsible reaction mankind must provide. Students experienced real time construction, including outdoor learning environments, and observed the gentle care and respect the contractors used to design and build learning benches from recycled bricks from TT1, as tribute and a sign of resilience and sustainability. Students had the opportunity to learn about LEED specifications as the expansion of their school happened around them daily. They began to understand how we all must learn to

co-exist as neighbors, from taking into consideration the effect of stormwater runoff on wildlife, to why new low-flow toilets and shut-off faucets were necessary to protect all of the inhabitants of the campus.

Staff and students also responded to the nature-made challenge by forming new extracurricular clubs, including a green team to work on beautification and conservation, a STEAM (science, technology, engineering, arts, and math) team to learn the science behind it all, and a robotics team to remind us we must always look ahead to help build a brighter future. The school also formed partnerships with Lejeune High School, engineering and maintenance battalions, and the base biologist to offer real-life learning experiences.

The need for acquisition of additional learning tools also became apparent, so budgets were scrubbed and curricular purchases made. Due to the proactive investments the school was making on its own, TTES was asked to become one of DoDEA's first STEAM pilot schools. The school was able to outfit three technology labs and purchase one of the first mobile computer labs in DoDEA. With the new footprint came enough space to create a dedicated science lab – known as the STEAM Room – as well as several outdoor learning spaces for experimentation, creation, and innovation. Students use microscopes to learn about the smallest units of life and use skeletal models to identify anatomy. TTES has grown plants in barrel gardens that expanded across the continents, and raised ducks, chicken, and butterflies.

> From the school's mascot, the tiger, which is among the most endangered species on the planet, to resource management that emerged stronger after the catastrophic natural disaster that destroyed homes and displaced students, to the features of its feeder school building, the TTES community is keenly aware of humankind's interdependence with the natural world.

TTES is the only school at Camp Lejeune that has a student-led fundraising campaign inclusive of a healthy walk in honor of an adopted charity, to which the students have contributed over $6,000 in the last five years.

Florida

Castle Creek Elementary School, Orlando, Fla.

Even the occasional alligator is an environmental learning opportunity

Castle Creek Elementary is a public school with an enrollment of 940 students, 78 percent of whom are eligible for free and reduced-price lunch. Within the school's suburban setting, the Castle Creek community strives to help students develop a

proactive mindset as productive and contributing citizens of their local and global community. At Castle Creek, students' learning is framed though an awareness of environmental impact and personal and community wellbeing. Castle Creek Elementary was named the top green school in Orange County and top green building in Florida through Sustainable Florida for 2015-16.

Reducing the environmental impact of operations through conservation and recycling is a top priority at Castle Creek. It has cut 603 metric tons of greenhouse gas emissions over 30 months, and maintains a 60 percent recycling rate. Castle Creek has implemented a no-idling policy, safe pedestrian and bike routes to school, a walking school bus program, secure racks for bikes, a parent program designed to encourage neighborhood parents to carpool, and an a certified green bus that runs at 4:45 p.m. for all after-school programs, eliminating 35 to 40 cars per day. Ninety percent of the school's paper is environmentally preferable. Castle Creek has reduced domestic water usage over 35 percent in two years, and introduced trayless meals, reducing solid waste by saving the use of over 800 trays per day.

Overhead walkway coverings reduce the heat from the sidewalks. New trees have been added to the outdoor classroom, and the school chooses mulch and grass over pavement in walkways to reduce the heat island effect. Students and teachers installed 10 rain barrels for use in the front of the school and in the garden areas. Butterfly and vegetable gardens are in containers that capitalize on stored rainwater. Castle Creek science classes and the 4-H club have raised drought-resistant grass. The Florida-friendly trees near the outdoor classroom and bird sanctuary were placed in the marshy, wet area near the retention pond in order to have a moist area for the roots to grow in the summer without the use of additional water. The 4-H club plants at the edge of the pond to reduce algae growth and avoid contaminants for the birds, turtles, and occasional alligator in the pond.

Castle Creek released ladybugs in the garden area; covered all outside trash cans to avoid both pests and wild animals; and conducts monthly inspections of the school and grounds as part of its IPM plan. The Castle Creek LEGO Robotics Team project is to invent a bear repellent that will not harm the bear's breathing or ability to smell, but will repel a bear from human areas. The school borders woods and a pond, and

teachers employ natural lighting during the day in classrooms. The surrounding natural area contains rabbits, deer, raccoons, possums, a variety of birds and snakes, lots of turtles, and an occasional alligator for students to observe. An outdoor reading room and bird sanctuary allow students to enjoy the natural habitat around the school while learning. Students participating in the 4-H club research nature and the environment through outdoor observations, and have built a nature trail that alerts all observers to the wildlife in the area.

As a Title I school, Castle Creek provides breakfast, lunch, and even dinner to students. All students have an exercise period each day, and are provided fresh fruits and vegetables daily, whether through the three meals served at the school, or through the classroom snack time. All students who are involved in Extended Day, tutoring, and clubs receive a free healthy and balanced dinner. The school offers a full-time food pantry called Casey's Closet that is open to families and to elderly community members, in partnership with the Second Harvest Food Bank of Central Florida. The school 4-H club grows fresh vegetables throughout the year that are distributed through Casey's Closet.

The school integrates the Orange County Public Schools Green School Initiative into all Florida standards in all classes, including the arts. Green School topics are embedded into the curriculum in the way standards are presented, materials are developed to present the standards, and activities and field trips are incorporated to teach the standards. These techniques teach students to solve problems that help reduce energy and the use of our resources while protecting the environment. Students study the habits of ants and learn that all wildlife has a purpose. The weekly principal's message, school web site, and school Facebook page remind families of their civic responsibilities toward the planet and fellow inhabitants, human, plant, and animal.

Surfside Elementary School, Satellite Beach, Fla.

A beachside school protects water quality and the planet

Surfside Elementary is a small community school with innovative outdoor learning spaces, creative environmental education programs and active community involvement. Organic school gardens, schoolwide incubation and farm animal husbandry, and community outreach programs are just a few things that make this beachside school a model for developing respect for the planet through personal responsibility.

Environmental impact is a central focus of Surfside's operations. Over the last five years, the school has reduced greenhouse gas emissions by 45 percent. Surfside has a 44 percent recycling rate through use of a recycling compacting dumpster, and having students feed daily vegetable scraps to the chickens, ducks, geese, and turkeys, among other strategies. The manure from the poultry run is used to fertilize fruit trees. Schoolwide recycling and conservation happens daily in the classrooms, offices, and cafeteria. The Recycled Art Club, Green Team, and 4-H Club all use recycled materials, spread awareness, and help to keep the campus clean and green.

A certified Florida master gardener has landscaped the campus with water-efficient Florida native plants. There is a large grove of live oaks near the bike racks, a sensory garden near the office, a native butterfly garden across the entire front of the campus, and numerous butterfly gardens with host and nectar plants for different species throughout the interior of the school grounds. Irrigation is from 10 rain barrels, with temporary drip irrigation used only when necessary. The few paved areas (sidewalks, physical education court, and a parking area) are surrounded by gardens that help to soak up rainwater, while all other areas are permeable.

The small neighborhood school uses no buses; instead, encouraged by a new bike rack and three crossing guards, over 75 percent of students walk or ride their bikes to school, as do many teachers. An annual Walk to School Day boasts major community involvement and a huge turnout. A new car loop system reduced idling time by over 50 percent, and now allows student pickup to flow smoothly and efficiently.

Surfside has a robust IPM plan, the entire school is organic and pesticide free, and all cleaning products are green-certified. Surfside proactively addresses pest problems with the help of the Brevard County Extension office. The Green Team developed an innovative Zika mitigation plan to ensure that the school could keep rain barrels, tadpole habitats, and birdbaths full without promoting the spread of the Zika virus. Surfside enforces a policy prohibiting all tobacco use, including e-cigarettes, on school property or at school-sponsored events. The school adheres to the Asbestos Act, and its chemical management program includes a purchasing policy for less toxic products. Each classroom has large doors and windows that open to the outside, providing fresh air and natural light. The open campus ensures that every classroom and student space has views of trees, sky, flowers, and darting butterflies. A monthly campus cleanup and inspection by teachers and students is

done during Clean Up Your Corner Fridays. Environmental health or safety issues are documented and resolved by the School's Green Team, or referred to the proper authority.

At Surfside, physical and emotional health is just as important as academics for students to achieve their full potential. In health education class, all students learn to make informed decisions about their health, including physical activity and nutrition, which are celebrated during activities such as the Jog-a-thon and Organic Soup and Salad celebration. Students learn the skills to remain physically active for a lifetime through physical education, as well as activities such as Walk to School Day, Panther Pacers, and Morning Mile. The Surfside principal leads Walking Wednesday during which staff is encouraged to walk and brainstorm together. Staff members also have monthly healthy food celebrations. These activities are shared with parents through class and school newsletters.

The school is located just one mile from both the Atlantic Ocean and Indian River Lagoon, so it is vital that students understand their role in protecting the water and the planet. A marine science agent conducts workshops with students so they can better understand their roles as stewards of the waterways. Field trips, including to the Brevard Zoo, Indian River Lagoon, Sea World's One World One Ocean Program, Kid Power Nutrition, and the Barrier Island Sanctuary, plus special events such as Make a Difference Day, Dr. Seuss Lorax Week, Run for Shade 5K, and Earth Day celebrations all contribute to students' motivation, awareness, and commitment to helping the school and the planet. Project Learning Tree and 4-H programs help to shape Surfside's environmental education curriculum and policies.

At every grade level, teachers integrate environmental and sustainability concepts across subjects and in a variety of contexts. Grade level gardens allow teachers to combine academic achievement, nutrition, garden science, physical activity, food preparation, and fresh vegetable tastings to improve the health and wellness of children, families, and the school community. Students work in the gardens, and are engaged in hands-on life science projects with insects and poultry that are supported through not just curriculum and lesson plans, but also by community volunteers, business partners, and technology resources. The entire campus is an outdoor learning experience that brings the school community together.

Wilton Manors Elementary School, Wilton Manors, Fla.

Passionate students and critical thinking lead to environmental connection

The students and staff at Wilton Manors Elementary are authentically and wholly connected to the environment through a fully-integrated International Baccalaureate (IB) curriculum, sustainable school grounds, and a community-focused approach to sustainability. The school educates 630 students, 80 percent of whom are eligible for free or reduced-price lunch. Global environmental topics are researched and taught throughout interdisciplinary units of inquiry, which are designed to encourage students to interact personally and intimately with their natural surroundings. The school grounds are a place where students can learn and work with native plants and natural processes. Students, facilities staff, and educators embolden the school community to take ownership of their environment, and direct action in creating a functioning, sustainable, and conflict-free world.

Wilton Manors Elementary sets an example for sustainability, conservation, recycling, and environmental preservation. Recently, for example, students and staff attended NatureScape's Water Matters Day, where they learned about conserving water, and brought back drought-resistant trees native to the area to improve sustainability on campus. The school's butterfly garden is a certified schoolyard habitat. Wilton Manors twice has received top-three recognition from its hauling company Waste Management for promoting recycling through an Earth Day dumpster painting competition. Representatives visit to speak to students about their work and how to contribute to waste reduction.

The school reinvigorated its courtyard space to eliminate grass, and replanted the area with native shrubs and ground cover that minimize water use. Students and staff created a mosaic project that covers 12 seven-foot-tall pillars in the courtyard, eliminating the need for future painting in this area, reducing costs, and sparing the gardens chemical exposure. Wilton Manors staggered dismissal times and rerouted traffic to lessen CO2 emissions from vehicle idling. Buses remain parked with engines off until parents pick up their students. The school reduced greenhouse gas emissions 24 percent in eight years, and maintains a 54 percent recycling rate. In recognition of these efforts, the school was the first elementary school in Broward county, a 2013 District Sustainability Awardee, to receive the district's own P3 Eco Challenge award.

Through the Wilton Manors IB curriculum, students are taught how their choices directly influence their overall health and well-being. Teachers lead their students in exercise, regularly engage them in active learning, and frequently use brain break activities. Through school gardens, students learn about agriculture and planting, and how to care for and harvest homegrown foods. Wilton Manors encourages students and their families to walk to school, which gets them active and reduces CO2 emissions. Saved parking spaces have been repurposed as a place for walking parents to wait safely in the shade for their children. Wilton Manors participates in the American Heart Association's Jump Rope for Heart, and offers a Family Fitness Night to educate students and families on healthy lifestyles. The school also hosts a three-kilometer Walk for Peace that promotes the school's mission of spreading peace and harmony throughout the community and the world.

Wilton Manors IB curriculum, local partnerships, and extracurricular activities support environmental and sustainability literacy. Every day, the campus courtyard serves as an outside learning lab. Teachers have completed multiple trainings on how to run a class garden, how to teach their students how to garden for nutrition, and the importance of local foods. All grade levels use the space by planting and maintaining garden boxes. Some grade levels have created their gardens from upcycled materials, including old car tires and concrete blocks.

The IB curriculum includes six in-depth units of inquiry related to the environment, including: Plants as a Natural Resource, Living Things, Plant and Animal Adaptations, and Man's Impact on the Environment. Students have opportunities for off-campus, field-based environmental studies at Everglades National Park and Flamingo Gardens. The school's art club participates in a competition by the Wyland Foundation to promote learning about how human actions affect the environment. Students produced a collaborative mural to highlight the beauty of the oceans, and also created individual works. All pieces included a writing component by the students to be displayed around the school.

During their fifth grade year, students choose projects that address current environmental issues for their exhibition presentations. They engage in critical thinking to determine the necessary steps for forward action, and create information products about conservation that can be disseminated throughout their local communities. The nature of discovery and inquiry in the IB program, partnered with the connected, innovative, and knowledgeable community at Wilton Manors Elementary creates a rich and unique environment for students to ignite their passion and take direct action in protecting and caring for the planet.

Air Base K-8 Center, Homestead, Fla.

Educate, inspire, and empower the future stewards of our planet

Air Base K-8 Center, serving 1056 students, nearly 60 percent of whom are eligible for free and reduced-price lunch, has earned the Florida Green School Award. The magnet school's participation in Dade County's Dream in Green Program has provided hands-on environmental learning experiences and opened doors to many unique learning opportunities. The World Climate Change Project, a White House initiative, is a once-in-a-lifetime event sponsored by the Frost Museum of Science, the University of Miami, and Dream in Green. Air Base K-8 Center was one of only seven schools chosen to mentor high school students representing countries as they addressed real-world problems related to climate change by reducing CO2 levels. A computer simulation program demonstrated the issues being negotiated at the COP21 Climate Change Talks in Paris.

Sustainability kick-off assemblies are held at the start of the school year. Featuring energy efficiency, water conservation, and waste reduction, these events are presented by students and teachers via skits, songs, and PowerPoint presentation. Local and global challenges and corresponding solutions are explored. Following the kick-off, everyone creates a Green Promise, and places it on display both as a reminder to act on their pledge, and as a show of the school's unified vision of sustainability progress. Environmental literacy also is a part of Air Base's formal school improvement plan.

Air Base K-8 Center's green journey began with its Green Team students wanting to have a positive effect on the environment. Constructed in 1958, before air conditioning, there are 80 large (22" x 24") air vents, which were sealed by maintenance personnel who volunteered their time and materials. Every year the Environmental Ambassador Club seals gaps in jalousie windows with plastic wrap, cord, and Styrofoam. The school's Green Ranger Program features daily green behaviors that address energy efficiency, water conservation, and waste reduction to institutionalize daily green habits. The school participated in the districtwide Cool Roof Project with partners Florida International University, Florida Power & Light, and Ernst & Young, through which students collect room and roof temperature data via installed sensors to then compare between uncoated and coated spaces. Air Base has achieved a 45 percent greenhouse gas reduction in three years, and a 55 percent water use reduction in two years.

Recycling is a priority at Air Base K-8 Center, which recycles plastic bottles and aluminum cans through the PepsiCo Recycle Rally to benefit veterans. Collection

efforts also include electronic equipment, small electronics, printer ink, juice pouches, cartons, paper/cardboard, and shoes for children in Africa. Recycled objects are used creatively in cultural activities, art, and content areas. The No Plastic Is Fantastic campaign resulted in halting the use of plastic bags for milk and juice for all meals, while compostable trays have replaced styrofoam. So far, Air Base has eliminated the use of 279,760 plastic bags and 31,050 trays. Two green hand dryers have eliminated 7,302 pounds of waste, and two water bottle filling stations reduce the number of plastic bottles.

Air Base K-8 Center is a two time selectee of the HealthierUS School Challenge: Smarter Lunchrooms and Let's Move Active Schools awards. Healthy snacks are offered during faculty meetings, as a fundraiser, and in vending machines. The school's organic gardens are maintained by students, teachers, and parent volunteers. Many families have become inspired to start their own organic gardens.

Collection efforts include electronic equipment, small electronics, printer ink, juice pouches, cartons, paper/cardboard, and shoes for children in Africa. Recycled objects are used creatively in cultural activities, art, and content areas.

Members of the community have been invited to teach students about pollinating bees, organic gardening, and native ecosystems; park rangers and biologists teach about natural resources and the need to protect them; environmental experts show and share expertise about solar energy, biofuels, natural gas, recycling, coral reef restoration, and ecosystems.

Environmental literacy is infused into the Air Base K-8 Center curriculum in myriad ways, and is supported by green partners who educate the school and surrounding community about sustainability. At the Air Base Green Education Fair, community organizations and educational institutions are invited to share their environmental expertise. Topics include green energies, water conservation, recycling, native ecosystems, organic gardening, green buildings, wildlife conservation, and green careers. Classes participate in field trips to the Everglades and Biscayne national parks, museums, LEED certified buildings, postsecondary environmental centers, native biomes, zoos, and community gardens.

The Deering Estate's Nurturing Environmental Stewards for Today and Tomorrow program teaches environmental lessons on- and off-site. During a culminating activity supported by Deering and Kohl's, volunteers and students created a map of the U.S. with items collected at a mangrove cleanup as part of a Nurturing Environmental Stewards for Today and Tomorrow lesson titled United Trashing of America. The school turned this problem into a solution, with *United Greening of America* as the theme for the following year. Air Base K-8 Center students present to the city council and the mayor regarding the school's environmental initiatives. As

a result of this visibility, Homestead Air Reserve Base now hosts the school's Environmental Ambassador Club for annual field trips.

In science classes, STEM concepts are taught through the lens of sustaining the Earth's resources, and the effect of our actions in the environment. Edible plants similar to the plants found on NASA's International Space Station are grown through the Fairchild Challenge Program. Critical thinking classes explore solar and wind energy. Students take on leadership roles as they present in the community and to their peers. Students interact with students from other schools and countries, while learning it is the responsibility of all to be environmental stewards.

This learning also occurs in the outdoor classroom, butterfly gardens, wildflower meadow, and organic gardens. These gardens, accredited with five wildlife certifications, have become living laboratories. Students engage in the Atala Butterfly and Coontie Ecosystem Restoration Project, and active research of an endangered bat. Water conservation practices include rain barrels, mulching, and using native plants and trees. The school successfully spearheaded an effort to obtain a protective designation for a natural area called Pine Rockland, and received permission to use this site for educational purposes, leveraging partners and eco-events to provide civic engagement and service learning opportunities to current and former students.

Duval County Public Schools, Jacksonville, Florida

Honoring outstanding educators with a Green Champions Award

Duval County Public Schools serves 128,463 students, 76 percent of whom are eligible for free and reduced-price lunch. When facility expertise meets teachers passionate about sustainability using STEM-focused curriculum, the result is sustainable education for every school, every classroom, every student, every day. Duval's community and business partners provide resources, industry expertise, new ideas, and insight into cutting-edge technologies for students and staff.

The district reduces environmental impact and costs through effective conservation, waste management, and transportation strategies. This includes building, renovating, and maintaining facilities that are comfortable, safe, and efficient, and benchmarking building performance metrics. Duval has created friendly competition between schools so they strive for continuous conservation behavioral improvement. Duval also instituted a Green Champions Network made up of teachers and staff who voluntarily facilitate green teams to incorporate sustainability concepts at their schools, and an award-winning teacher supply depot that ensures teachers have

needed supplies by repurposing donated materials. Every Duval school uses classroom recycling bins (repurposed five-gallon buckets) and cafeteria recycling zones. Curriculum enhancement materials and single-stream recycling center field trips are provided. The district allows employees to charge electric vehicles while at work, and uses native landscaping, rain barrels, cisterns, and smart irrigation to save water.

Duval has implemented no-cost strategies, and its forward-thinking investment of capital dollars to fund sustainability has resulted in immediate operating cost savings and maximum results. The district has reduced annual utility costs from $26 million to $20 million, reduced energy use by 32 percent, and has a 42 percent recycling rate.

DCPS improves student and staff health by providing safe, comfortable, productive facilities, as well as an educational culture that makes leading a healthy lifestyle second nature. Facilities are maintained in a healthy manner by using IPM strategies, paying close attention to proper ventilation and indoor air quality, and closely monitoring procedures to ensure that students and staff with asthma and other medical conditions are comfortable and safe.

Every school has locally grown produce, and salads are offered in every school, every day, using dark, leafy greens. Produce from Duval school gardens is cleaned and served in school cafeterias, paired with a culinary demonstration and educational presentation from dietitians. Duval participates actively in programs such as NFL Play 60, Fuel Up to Play 60, nutrition education, physical activity enhancement, Action for Healthy Kids, Alliance for Healthier Generation, Let's Move Jacksonville, and Let's Move Active Schools.

Duval provides effective environmental and sustainability education by using STEM-based curricula, encouraging sustainability-based school themes, supporting Green Champions, and nurturing local community and business partnerships. The district recognizes the work of teachers by offering a Green Champions award. These teachers are passionate about sustainability, and are willing to work tirelessly, on a volunteer basis, to make sure the next generation understands the importance of environmental stewardship. Winners are recognized by the Duval school board and

other senior leadership. Duval conducts an annual environmental science professional development course that keeps teachers up to date on current trends related to teaching about the environment.

The district provides students with opportunities to participate in a variety of environmentally-focused field trips. STEAM Cultural Passport, in partnership with St. Johns River Keeper, allows fifth grade students to engage in science-based, hands-on learning experiences that help develop a better understanding of local ecosystems. This also exposes students to water quality testing equipment and techniques used by local scientists. Other programs include University of North Florida Eco Adventure and Tree Hill Nature Center. Second grade students visit the Cummer Museum of Art and Gardens to study interaction between people and the natural and man-made worlds.

Sustainable school themes allow students to choose an area of interest, deepening their understanding of concepts. For example, GRASP Academy is the first and only public school for students with dyslexia. GRASP is developing and building a Net Zero mini-farm that blends innovative environmental waste solutions with the needs of dyslexic students. Mathew Gilbert Middle School's Eco-Architecture program enables students to explore sustainable construction methods used by designers and engineers. The district also includes two coastal science academies where students participate in field studies.

Georgia

Gilbert Elementary School, La Fayette, Ga.

Imaginations run wild in the school forest

Gilbert Elementary School students are place-and project-based STEM learners. At each grade level, students are involved in ongoing authentic STEM research taking place throughout the school year, rather than as an isolated event. Every aspect of Gilbert has an environmental focus, including art and physical education, which focus on outdoor education. Students work collaboratively on various projects and learn to communicate their findings. One product of fourth-grade students' work is two miles of student-blazed trails that are open to the public outside of school hours. Many Gilbert families take advantage of this resource, and each class is targeted to spend an hour per day in the forest. The school's Forest Kindergarten classes spend three hours per day outdoors, rain or shine, in self-initiated playtime in the woods. Students learn to use their imaginations, be creative, discover, and explore, while developing a love and empathy for the natural world.

Each grade level conducts environmental or sustainability education research projects. Because of the level of curriculum integration, students are able to spend more time exploring nature, problem solving, and developing innovative solutions to real-world problems through practical application. Gilbert students hammer, dig, saw, and measure. Students have worked to build passive solar panels for use in classrooms, a hydroelectric generator with a washing machine, and have grown plants for biofuels. Each grade works with professionals in a field related to their project, such as arborists, farmers, biologists, engineers, foresters, professors, and horticulturists.

Kindergarten learns about life cycles by hatching and raising chickens. First grade plants milkweed and explores the forest tagging plants that will attract pollinators. Second grade rescues native plants and explores the forest to find rare plants with a biologist. Third graders are the resident organic gardeners. They are responsible for the maintenance of Gilbert's composting program and worm farm, and they collect food from the cafeteria each day after the lunch period to use in the composting bins, composting an average of one to two yards a month. Every fifth grader spends three days at an environmental education camp to which the Gilbert curriculum is aligned. The gifted program focuses on water conservation through a water catchment design challenge and aquaponics lab.

Gilbert faculty spent a year developing grade level projects to cover as many standards as possible. Teachers spent two years working with Jean Lomino, the former director of the Chattanooga Nature Center and founder of the Wahatchie School, a private outdoor preschool. Gilbert educators work closely with Southern Adventist University's outdoor education faculty, and the school has had several teachers trained through Project WET and Project WILD.

Gilbert offers a school-based health center, the closest pediatric care center within 35 miles, and has been awarded $650,000 yearly in ongoing funding for the clinic, which offers a wide variety of services to students and families, including medical, dental, mental health, nutrition and wellness, and assistance with social services.

Nearly 84 percent of Gilbert students qualify for free and reduced lunch. Gilbert also celebrates an annual Olympics and a family nutrition night. The school provides produce to the Care Mission, a food pantry used by many students' families. In addition to lessons on growing plants, GES students participate in tastings, develop recipes, and cultivate tilapia and catfish in the aquaponics lab.

Gilbert opened in 1993 and has made few alterations to the initial construction. As a result, one of the school's successes was its energy reduction efforts through new policies and procedures, a new control system, an updated boiler and cooling tower, and gradually updating all lighting to LED over several years. All of these changes seemed small, but had a dramatic effect on resource consumption. Other behavioral changes by this school, such as in recycling, have had ripple effects at the district level. The school has gone paperless in grades three through five by using Google Classroom and Seesaw. Half of the school's 21 acres are forested and the site includes a certified wildlife habitat. The school also has access to an additional 320 acres of forest surrounding the school-owned land.

Kinchafoonee Primary School, Leesburg, Ga.

Fine attention to detail in all things sustainability

Kinchafoonee Primary School (KPS) is in Lee County, in the southwest part of Georgia. With approximately 29,000 residents, Lee County is a unique blend of commercial and industrial development and traditional rural feel. Scattered with creeks, lakes, plantations, and historical sites, the community offers excellent educational and recreational opportunities. Kinchafoonee was opened in December of 1996, and serves approximately 697 students in kindergarten through second grade, 51 percent of whom qualify for free and reduced-price lunch.

The school sits on approximately 29 acres, with over 60 percent of its land dedicated to environmentally beneficial purposes. The property includes 8.5 acres of designated wetlands with a newly renovated nature trail that runs through this ecological gem. The wetlands are a habitat for many species, and provide students with opportunities for exploring and learning in a natural setting.

To reduce environmental impact and costs, the school system employs an energy specialist who gathers and analyzes data and implements programs and policies to help the members of the KPS population to be good stewards of the environment, as well as to minimize costs. Using EnergyCap software and Cenergistic tools, the school has been tracking its resource use and making behavioral changes. In a single year, the school reduced its greenhouse gas emissions by 35 percent.

Kinchafoonee uses Green Seal certified cleaning products and copy paper made from sustainably forested trees. All water fixtures are low-flow, and sinks have self-closure fixtures. The school uses natural light in all areas.

Through KPS' participation in the Pepsi Recycle Rally, students have recycled over 51,000 plastic bottles that otherwise would have gone into landfills, and have gained a great deal of awareness of the effect that recycling can have on this planet. The school is currently fourth in the nation in the competition. Students also participate in an annual reading-for-recycling program. There is a no-idle policy in place for buses, and a park-and-pick up option for parents in cars.

In an effort to improve the health and wellness of students and staff, KPS uses a Coordinated School Health approach. The school has a full-time nurse and a full-time counselor. Students are engaged in physical activity on a daily basis, and KPS holds family events that focus on physical fitness and well-being, such as quarterly walk/run events, Family Fitness night, and a field day called "P.E. Extravaganza." Students enjoy 30 minutes of recess per day and 150 minutes of physical education each week. The school partners with local mental, dental, and eye health providers to support the well-being of students and their caregivers, and has implemented a social emotional learning curriculum. Kinchafoonee partners with a local church to provide economically disadvantaged students with nutritious snacks to supplement their meals over the weekend, and offers staff outdoor workouts onsite four times a week.

Students play an active role in taking care of KPS school gardens. They prepare the beds, weed, plant, water, and harvest the produce that is grown. Students played a role in developing the school's butterfly garden, now part of the Roslyn Cater Butterfly Trail.

Providing students with effective environmental and sustainability education begins with the professional development of staff. Kinchafoonee has a dedicated art / STEAM teacher who is certified in many areas of environmental education, serves as a leader in implementing new programs; and provides support and resources to other classroom teachers. In addition, KPS teachers increasingly are taking their lessons outdoors as a means of creating new, authentic, and exciting learning opportunities in all subject areas. In an effort to encourage outdoor learning experiences, the school created outdoor learning backpacks that contain resources to make outdoor lessons and activities more accessible. The environmental education lead teacher supplies the backpacks with new lessons and ideas on a regular basis.

Students play an active role in taking care of KPS school gardens. They prepare the beds, weed, plant, water, and harvest the produce that is grown. Students played a role in developing the school's butterfly garden, now part of the Roslyn Cater Butterfly Trail, which was developed using grant funds from Monarchs Across Georgia. Students learn about planting native plants; feeding birds, bees, and butterflies; and outdoor environments, such as pollinator gardens, through the onsite wetlands, animal habitats, Monarch butterfly habitat, and the school's animal education welfare program. Students are assessed on their understanding of environmental concepts such as the life cycle of butterflies, assessment of plants and how they grow, and the weather and seasons. All teachers have access to environmental training through programs including Project WET, Project WILD, Project Learning Tree, Adopt-a-Stream, Schoolyard Investigation Plans, Conservation, Outdoor Learning, and Integrated Teaching.

Morningside Elementary School, Atlanta, Ga.

Garden year-round; learn social and emotional skills every day

Located in the heart of Atlanta's Virginia Highland neighborhood, Morningside Elementary School serves close to 900 students in kindergarten through fifth grade, in an urban public school system. The school was built in 1929 and has not had a major renovation since. Because of this, Morningside's occupants work especially hard to reduce costs and environmental impact. Morningside recently installed a $5,000,000, state-of-the-art HVAC unit that works both to heat and cool the building, eliminating the need for two separate units, reducing energy costs, and improving indoor air quality. The system uses outside units to supply constant air to the classrooms, which helps reduce carbon dioxide levels.

The Morningside PTA has invested hundreds of thousands of dollars to help reduce water consumption costs by installing two turf fields, a unique, forward-thinking investment for an urban public elementary school. Sprinkler systems were removed (as turf fields do not need to be watered), and drains were installed underneath to help with stormwater runoff. Partnering with Trees Atlanta, a nonprofit citizens' group in Atlanta that seeks to plant, preserve, and protect the city's trees, has allowed Morningside to plant a variety of regionally appropriate trees.

Students are encouraged to bring reusable lunchroom containers and participate actively in the recycling club. Morningside completed a 10-day pilot composting program that reduced lunchroom waste by nearly 40 percent. The school uses all-natural Green Seal-certified cleaning products. Morningside works with Clean Air Campaign Georgia (now known as OnAir), participates in Safe Routes to Schools,

and sponsors several walk-to-school days annually. The school has formed a Student Wellness and Garden (SWAG) committee that has initiated a variety of wellness activities.

First Fitness Friday, when local nutrition and fitness experts hold workshops on how to live a healthier lifestyle, is open to students, parents, and the community. Morningside also offers Parent University during the school day, during which local businesses can come and share healthy lifestyle tips for families. There is a no-junk-food reward policy, and teachers wear Fitbits earned through a grant to help track their steps each day. The school's full-time nurse helps any student who needs medical attention, and staff is trained in CPR, diabetic treatment, and Epi-Pen use. The physical education department sees each child within the building two times a week, year-round. In a recent Presidential Fitnessgram test, Morningside's fourth and fifth grade students outperformed the rest of the district in all five areas of health related fitness. These same two physical education teachers offer before-school fitness classes, and even a triathlon club where students are able to participate in their very own mini-triathlon.

Morningside oversees a garden, so that students harvest fresh fruit, vegetables, and herbs year-round. The harvest is often featured in the cafeteria and at nearby restaurants. The school partners with a local farm-to-table company to provide organic vegetables, eggs, and meats to families that enroll in the program. Aside from fitness and nutrition, Morningside is an active No Place for Hate school, offering annual anti-bullying assemblies to all students, after which each child signs their name as a pledge against bullying. Each morning, every child in the building participates in a Social Emotional Learning activity led by teachers and using the Second Step program.

Sustainability education at Morningside begins with garden lessons that progress at each grade level. Each grade has hands-on environmental units in the school garden. Each grade level has science units that largely are focused on environmental impact and sustainability, teaching topics such as soil composition, erosion, and restoration in third grade, and animal habitats and habitat preservation in fourth grade. Teachers are encouraged to use the school garden for lessons in

historical scientific developments, mathematics, biological sciences, and other subjects. Much of the gifted curriculum expands upon this to focus on specific issues and the technologies applicable. Morningside also leverages a variety of partnerships, field trips, and volunteers to teach outdoor education.

Parents teach weekly garden lessons to younger grades, and second- and third-grade students take field trips to nature preserves around the city. Multidisciplinary partnerships and guest speakers provide each grade with a deeper understanding of the real-world issues of sustainability such as climate change, solar energy, energy conservation, and air and water quality. Morningside employs wide range of resources (such as those from North American Association for Environmental Education, SaveOnEnergy, and Green Strides) to interweave the classroom curriculum with fundamental concepts of sustainability.

The University of Georgia, Athens, Ga.

Making commitments and rising to challenges

Inspired leaders, stronger communities and thriving natural systems … that's the University of Georgia (UGA) commitment. This flagship university is improving the world and addressing grand global challenges through better local solutions. Sustainability research, education, service and campus operations are hallmarks of UGA's 2020 Strategic Plan, and there has been marked progress toward realizing those goals.

For UGA, as a public land grant, Regional Sun Grant, National Sea Grant, and National Space Grant research university, stewardship of natural resources and advancing campus sustainability are of strategic importance. The institution is currently using 31 percent less water per square foot than it was in 2007, with the goal of a 40 percent or greater reduction by 2020. To improve water quality on campus and beyond, more than 75 rain gardens and 16 cisterns for rain and condensate water harvesting and reuse have been installed on UGA's Athens campus.

UGA has exceeded the Georgia Governor's Energy Challenge, and currently is using 20 percent less energy per square foot than in 2007, with a goal of 25 percent or greater reduction by 2020. Infrastructure improvements from centralized chillers at district energy plants to steam pit insulation and LED lighting retrofits also have led to energy savings and reduced costs, and UGA has installed more than one megawatt of renewable solar energy on its main campus. Similarly, the university is striving to reduce the amount of waste sent to local landfills by 65 percent by 2020.

With a long way to go to reach this ambitious target, UGA is making progress by providing infrastructure that makes it just as easy to recycle materials on campus as it is to throw them away, and by composting all organic materials from every dining hall.

Because UGA operates the largest campus transit system in the country, with over 11 million annual riders, the university plans to convert one-third of its buses to all-electric vehicles in 2017, significantly reducing tailpipe emissions, maintenance and operating costs. Overall, the school has reduced greenhouse gas emissions by more than eight percent since 2010. These initiatives and others are helping UGA to be a better neighbor and more responsible steward of natural and financial resources.

The university also is deeply committed to the health and well-being of students, faculty, staff and visitors. Infrastructure, planning, and design initiatives, as well as health and wellness programs, create healthy interior and exterior environments and opportunities for personal wellness. The entire UGA—Athens campus is designated an arboretum and a Tree Campus USA. In the last two decades, more than 60 acres of new green space have replaced previously paved areas to create an increasingly pedestrian-friendly and ecologically functional landscape. UGA is designated a Bronze-level Bicycle Friendly University with over 16 miles of bike lanes, trails, and shared use paths on campus and over 600 participants in the Bulldog Bikes bike share program. The campus is tobacco-free, and the decommissioning of UGA's only coal-fired boiler in 2015 has further contributed to healthy outdoor air throughout the community. Campus buildings are maintained through a certified green cleaning program to provide healthy interior environments for all occupants. Approximately 20 percent of all food items sold by UGA Food Services come from Georgia or bordering states, and healthy, nutritious options are available at every meal in every dining hall.

UGA students are directly involved in growing and providing wholesome foods to community members in need through the student-run UGArden Education & Demonstration Farm and the UGA Campus Kitchen. The Be Well UGA program promotes emotional, intellectual, physical, environmental, social, and spiritual well-being for all at UGA. Numerous programs and services are available to students

experiencing challenging situations, such as EMBARK UGA, which is geared toward increasing college access and retention for youth who have experienced foster care or homelessness; the UGA Student Food Pantry and Hygiene Closet; and the reCYCLE program, which provides refurbished bicycles free of charge to students in need of affordable transportation options. UGA's Work/Life Balance program provides a central location for relevant services and opportunities to assist faculty and staff in managing life's challenges, from workplace stress to caring for family members. In addition, UGA Recreational Sports promotes healthy lifestyle choices by providing development, growth, and education for the campus and local community, including engaging outdoor recreation trips and clinics.

With a school motto that reads "to teach, to serve, and to inquire into the nature of things," education and innovation are central to UGA's mission. UGA is committed to solving grand challenges for Georgia, the United States, and the world, as well as to training students who are capable of solving real-world, multifaceted problems with no simple solutions. All undergraduate students must satisfy the Environmental Awareness Requirement, including a basic understanding of the interactions between human activity and the environment at local, regional, or global scales. All students also must engage in at least one experiential learning activity that enhances learning and positions them for success after graduation.

In addition to numerous graduate and undergraduate degree programs related to sustainability, the Interdisciplinary Certificate in Sustainability provides students with a foundation in the principles and practice of social, environmental, and economic sustainability, as well as a valued credential to enhance their competitiveness in the job market.

Overall, UGA offers more than 430 sustainability-related courses, as well as faculty resources to promote integration of sustainability across the curriculum. The Office of Sustainability Student Internship Program provides experiential learning, leadership, and professional development while having a positive and tangible effect on the UGA and Athens communities. Since 2010, the Office of Sustainability has provided over 250 internship opportunities to students in 62 different degree programs for a total of over 31,000 hours of service. The Office of Sustainability also has provided $210,000 in campus sustainability grants to fund 58 student-led projects, many of which are now ongoing operational and experiential learning programs. Overall in 2015, UGA researchers received over $185 million in external research funding to solve grand challenges related to sustainable agriculture, water resources, bioenergy, waste reduction, public health, and much more.

Current sustainability-focused research at UGA includes, but is not limited to, developing drought-tolerant sorghum that enhances cereal food crops, creating

compostable plastic packaging from plants, understanding drivers in outbreaks of infectious disease and understanding threats posed by the Zika virus.

Illinois

Maercker Intermediate School, Westmont, Ill.

Even little libraries promote environmental learning

Maercker Intermediate School's sustainability efforts have been bolstered by many national and community partners and funders. The school won a grant in 2016 to have four solar panels installed on its roof to teach students and staff alike how solar power works. Monitors in the main hallway and in the school's Green Room display the amount of energy collected. The Maercker STEM teacher won the Navy SeaPerch grant to enable some students to build and operate remotely operated vehicles. The school benefited from a Scholastic grant, with which the faculty purchased books for the school library to support environmental literacy, as well as a grant from the Scholastic educational foundation to install three Little Free Libraries. Maercker was the first school in Illinois to receive the new DuPage County Water Quality Flag in 2014.

Maercker School tracks energy usage, and has retrofitted to T-8 fluorescent lighting throughout the facility, with motion sensors in all high traffic areas. The building automation system schedules start and stop times for every rooftop HVAC unit, as well as all exhaust fans and outdoor lighting, to conserve energy. Bathrooms have low-flow toilets and automated sensors on sinks. The school's native garden is maintained by the Ecology Club, and does not require irrigation. The Garden Club converted a grass island in the parking lot into an additional native garden.

Maercker School participates in the U.S. Department of Agriculture (USDA)'s HealthierUS School Challenge. The full-service kitchen provides students with hot meals, including fresh fruit and vegetable options daily. Physical education teachers sponsor Jump Rope for Heart, and teach students how exercise and nutrition can help prevent disease. The physical education curriculum includes units in adventure education and cooperative games, cardiovascular runs, muscular strength, circuit

training, and yoga. The school collaborates with T.R.U.E. Fit, a national organization that works to provide a healthier culture for students.

Fifth graders attend the outdoor education facility at nearby Fullersburg Woods Forest Preserve twice each year to learn about invasive plants, water quality, and team building. Every classroom, as well as the main office, staff lounge, and staff workroom, have recycling bins for paper and plastic. The Ecology Club collects lunchroom waste to compost every day, and teaches students which items can be recycled from their hot school lunch or cold lunch from home. Bins for recycling plastic bags and other plastic film are placed on each floor.

The school works closely with SCARCE, is an award-winning environmental education nonprofit dedicated to creating sustainable communities. The Ecology club coordinates with SCARCE to collect items such as cell phones, eyeglasses, keys, and crayons. At the end of the school year, the collects extra school supplies from students to give to students in need for the next year. The school employs a one-to-one ratio of Chromebooks and Google Classroom in order to reduce paper use and waste.

Maercker is proud to promote environmental education to a diverse 480-student population, 46 percent of whom are eligible for free and reduced-price lunch, through an after-school Ecology Club, Garden Club, and STEM Club, as well as a new STEM class, in which all students participate in a curriculum promoting environmental literacy. Working with the Westmont Village forester, students have planted six trees on campus.

Chiaravalle Montessori School, Evanston, Ill.

Peace education in a LEED Platinum facility

Chiaravalle Montessori is an independent school located in Evanston, Illinois for children ages six months through eighth grade. In 2015, Chiaravalle completed construction of the North Wing, a multi-story, LEED Platinum replacement for an aging annex attached to a historic school built in 1898. The new facility is a model for environmental responsibility for the school and Evanston community, both dedicated to upholding the Montessori philosophy of being stewards of the Earth, and allowing Chiaravalle to reduce energy consumption significantly. Sustainable features include geothermal heating and cooling, photovoltaics, a green roof, use of rapidly renewable materials, and a high-performance building envelope. Nearly 80 percent of all core learning spaces and regularly occupied spaces are daylit. The project is believed to have achieved two firsts: the first LEED Platinum Montessori

school addition in the United States, and the first LEED Platinum private school addition in Illinois. Chiaravalle offers tours of the North Wing to other schools interested in green building.

Montessori philosophy places tremendous emphasis on caring for and understanding the natural world. Educating students to understand the related science and moral responsibility of sustainability is essential along with outlets for their energy and an easy-to-practice lifestyle. This philosophy is woven into everything the Chiaravalle community does. Toddlers tend the garden; preschoolers sort recycling; elementary children work to restore endangered prairielands and manage schoolwide worm composting. Middle school students take multiple weeklong outdoor education trips and grow hydroponic basil for a local restaurant. Waste-free lunches, nontoxic cleaning products, and organic food are part of a comprehensive, sustainable education.

Students enjoy being in an active school where they can move throughout their day. They sit on the floor, at tables, or use standing desks, and have freedom to use the entire building as their learning space instead of being seated at a single desk for many hours. Students as young as three years old can decide to take a movement break by grabbing a gym pass whenever they feel the need to move. Additionally, there is an occupational therapy wiggle room for young students to move as needed. Opportunities for sports, yoga, dance, and meditation are available each day. Active transportation is strongly encouraged throughout the school community.

Chiaravalle has a student Green Team that works with peers, faculty, and parents to: encourage waste-free lunches; raise money for ecological nonprofit initiatives they wish to support; teach their peers how to use the compost bins; and initiate other student projects. The school purchases nontoxic chemicals to clean, as well as recycled and unbleached paper products. Chiaravalle has a green purchasing policy that prioritizes organic foods and ecofriendly products and processes whenever possible and cost effective.

Chiaravalle continues a long practice of teaching environmental stewardship as an integral part of its toddler through eighth grade programming. One focal point on

campus is the Learning Garden, the school's organic community garden space. The garden is tended by students, faculty, and parent volunteers. Students harvest produce for food prep by classrooms or to be shared at the Parent Café in exchange for a donation. Students report energy usage to the school community at community meetings.

Middle school students are building an OpenAg Personal Food Computer as part of the Massachusetts Institute of Technology Media Lab program. Furthermore, students regularly initiate their own sustainability groups and projects that are supported by faculty. Examples include advocating against a North Dakota pipeline route through native lands that might affect water quality, and fundraising and raising awareness around the needs of the wolf populations in North America.

Indiana

Burris Laboratory School, Muncie, Ind.

A sustainable school gem within Ball State

Burris Laboratory School is a kindergarten through twelfth grade school that is located on the campus of Ball State University (BSU) in Muncie, Ind. It is the only school in the Burris Laboratory School Corporation, and has the entire state as its enrollment district. The school has created a committee to lead efforts in reducing environmental impact and costs. Members audit energy usage at the beginning of the year, and then plan and implement various initiatives to improve in areas they identify as areas for growth. Burris, as part of Ball State University, is piloting the Canvas learning management system to reduce a huge amount of paper usage by the school. As a one-to-one iPad school, teachers and students use a file sharing system to transmit, sign, and submit papers electronically. In addition, and funded in part by a $5 million grant from the U.S. Department of Energy and over $33 million from the Indiana General Assembly, Ball State University's geothermal conversion project has replaced the university's existing coal-fired boilers and chilled water equipment with the nation's largest ground-source geothermal district energy system.

> Activities have included walking to the Ball State Green House and Christy Woods, field trips, annual fishing and hiking trips, Jump Rope for Heart American Association, and the annual owl walk.

Burris Laboratory School implements IPM policies and uses Green Seal and EPA-approved cleaning products, which are considered safer for human building occupants and the environment. Burris developed an indoor air quality management

program that includes asthma management strategies. The school has a full-time school nurse, onsite garden, and participates in a farm to school program.

The physical education teacher leads wellness committee programming, a school fitness club, a walking club, yoga, and other fitness activities. Students and staff on this committee brainstorm and implement healthy activities within the school, and update the school's health policy, which stipulates the amount of activity students receive and the type of food that is served. Activities have included walking to the Ball State Green House and Christy Woods, field trips, annual fishing and hiking trips, Jump Rope for Heart American Association, and the annual owl walk, where students from kindergarten through 12th grade walk alongside Ball State campus and play recreational games. The school offers physical activity breaks during staff meetings, and kindergarten through eighth grade students receive daily physical education classes, health classes, and a guidance class for emotional and social well-being.

The school's science lab provides environmental lessons to all students throughout the year, and also brings in many community partner guests, such as the state Department of Natural Resources, the YMCA, the Downtown Farm Stand, Youth Opportunity Center, and Ball State University faculty. Lessons include water quality and conservation, human effect on the environment, energy education, and sustainability. Partnerships are chosen carefully for scope of influence. For example, students partner with Student Voluntary Services at Ball State and the Indiana Department of Natural Resources to clean the White River, as well as areas in southern Indiana after tornado damage in 2012. Middle and high school students visit the White River for water testing and stream velocity as well as hiking and fishing camp. Students in kindergarten through fifth grade go to Christy Woods, Ministrista, and a planetarium.

Bethany Christian Schools, Goshen, Ind.

A 1954 building powered entirely on renewable energy

Bethany Christian Schools is a parochial school housing fourth through 12th grades, located on the south side of Goshen, Ind. Since its inception in 1954, care for the environment and community, along with health and wellness, have been key components of the educational programming. Bethany has been recognized locally for its unique and innovative approaches, winning several awards and being covered on a regular basis by local media.

In 2014, Bethany embarked on a capital campaign focusing on three areas: technology, finances, and environment / energy. The third aspect of this campaign made possible the installation of roof insulation and a full-fledged HVAC system in the old portion of the building to improve indoor air quality and heating efficiencies; a geothermal wellfield for operation of the HVAC system; a 3.6-kilowatt wind turbine; and solar panels that can provide 77 kilowatts of electricity. Restrooms were updated with low-flow fixtures, and hallway and parking lot lights were retrofitted with LEDs. Skylights were preserved and enhanced to provide natural lighting. Paper use has been reduced 31 percent, water consumption has been cut 19 percent, energy consumption has been reduced 31 percent, and greenhouse gas emissions have been lowered by 12 percent. The school generates 12 percent of its energy needs on campus with wind and solar, and purchases the rest from wind and solar sources.

Bethany participates in schoolwide recycling, accounting for a diversion of 24 percent of waste from the local landfill. Food scraps from the cafeteria are composted and used in the student-tended school garden, which provides fresh produce for the school's salad bar, as well as providing an educational opportunity for students to learn about gardening and sustainable living. The school's biannual fish fry fundraiser has become an opportunity to educate students and the general public about sustainable practices. Food scraps and paper products are composted, rather than going in the trash. At the most recent fish fry, 12 cubic yards of compostable material was diverted from the landfill.

Paper use has been reduced 31 percent, water consumption has been cut 19 percent, energy consumption has been reduced 31 percent, and greenhouse gas emissions have been lowered by 12 percent.

Environmental and sustainability concepts are taught in multiple courses at all grade levels. In the lower school, students study traditional energy and environment concepts, while taking advantage of a multitude of field trips to local parks and environmental centers. In high school, most students take Environmental Science. A highlight of this course includes two weeks outdoors studying the plants and organisms in the school retention pond, which was planted with native species in 2006 by students. High school Bible classes also address issues of environmental sustainability. Students study pacifism and its connection to nonviolent environmental activism and stewardship of resources, including stewardship of environmental resources like energy.

During a unit on renewable energy, Environmental Science students host students from the neighboring public elementary school. The Bethany high school students teach the visiting fifth graders about fossil fuels, wind and solar power, and

conservation. They compare electrical consumption of appliances, design wind turbine blades to compare voltage output, and use mini solar panels to study factors that affect the amount of energy created. Also led by Bethany students, first graders from another local elementary school come to Bethany to learn about plants and animals in the school's retention pond.

Experiencing the outdoors is an important part of education programming at Bethany. At the beginning of the school year, most students participate in one to two days of activities outdoors. Fourth and fifth grade students go to Camp Mack for a day to study colonial and Native American life. They build primitive shelters in the woods, find and eat wild edibles, and play games applicable to those time periods and cultures. Sixth and seventh grade students spend two days at Amigo Center for their Wilderness Experience, during which time they participate in outdoor education classes including nature games, canoeing and other outdoor cooperative activities. Eighth grade students have an overnight campout at Camp Friedenswald, learning wilderness survival skills including fire building, shelter building, orienteering, and canoeing. Ninth grade students spend two days at Camp Mack for a retreat, during which time they do a climbing wall, swim, take part in an ecology scavenger hunt, canoe, and cook over fires. Eleventh grade students take a daylong canoe trip on the Elkhart River. Most years the high school offers a course during January term, such as Winter Sports (cross-country skiing, ice skating, downhill skiing) or Bike Camping (bike maintenance and trip planning in January, with a four-day bike camping trip in June). The entire school has taken impromptu all-school recesses on the first warm day in the spring or unusually warm days in early December.

Because Bethany is a private school, students must provide their own transportation. The majority of Bethany students carpool, and many bike or walk during the warmer months. Bethany also holds an annual Bike/Walk to School Day, with nearly half of students participating.

Iowa

Iowa Lakes Community College, Estherville, Ia.

Powered by the force of the wind and an engaged community

Iowa Lakes Community College provides quality lifelong learning for students, staff, faculty, and community members within a five-county area. Learning in this school community is enhanced through resource efficiency and sustainability education efforts. Iowa Lakes incorporates sustainability education into numerous college programs, designs learning centers for maximum resource efficiency, and enhances each college campus with updated products that reduce environmental impact and improve health.

Iowa Lakes practiced green initiatives prior to 2006, but, in October 2011, the school's board adopted a Healthy School Program. Iowa Lakes was the first community college in the state to sign the American College and University President's Climate Commitment. The institution strives to align decision making with its commitment to the College Climate Action Plan, and aims to achieve climate neutrality with no net greenhouse gas emissions. Iowa Lakes has instituted many changes in order to achieve this goal, and continues to make changes and improve efficiency usage throughout each of its five campuses. For example, all new construction meets or exceeds LEED Silver standards. In addition, the college participates in ENERGY STAR Portfolio Manager and B3 Benchmarking.

The Sustainable Energy Resources and Technologies Center was constructed with geothermal renewable energy systems, controlled lighting and heating systems, 10 percent recycled content, and recyclable building materials. Iowa Lakes constructed a Vestas Wind turbine for training purposes, and sells all of the electricity from the turbine to the city of Estherville. Just short of $130,000 worth of electricity is generated each year, which covers more than 70 percent of what is used in electricity in the educational buildings on the Estherville campus.

Equipment or technology is replaced with environmentally sustainable products and technology. Paperless communications are encouraged, and any copies printed are set to automatic dual-sided printing. Recycling bins are located on all five campuses for plastic, paper, and aluminum cans. Iowa Lakes hands out reusable cloth grocery bags and cloth backpacks at events, such as the Clay County Fair, Career Day, and Student Orientation. End-of-year rummage sales provide the opportunity for students to purchase gently used items for their dormitories or other needs. Restrooms use automatic hand dryers rather than paper towels. Water fountains include water bottle filling stations, reducing plastic bottled water usage. Food service grease is recycled for biodiesel, and used oil from equipment is also recycled.

Iowa Lakes addresses faculty and staff wellness through health and wellness events, online financial awareness sessions, money toward fitness club memberships, paid family sick leave and personal sick leave upon hire, and annual health screenings. Wellness fairs are held tri-annually during mandatory employee in-service gatherings, and provide mini-sessions in health and wellness that cover a wide range of topics, including fitness, recreation, and office ergonomics.

Iowa Lakes provides faculty with a stipend toward a membership at a wellness facility that offers comprehensive cardiovascular and weight training equipment. Iowa Lakes Wellness Committee, in existence for over 25 years, continually works to promote wellness.

Students, faculty, and staff enjoy fresh vegetables, herbs, and fruits from the college garden. On average, the garden produces some 11,000 pounds of food yearly, much of which is eaten fresh or stored for later use. Iowa Lakes uses natural or green certified products when available during campus and housing cleaning. Mechanical or natural means are used for pest management. All paint, carpet, glues and other construction materials minimize air contaminants and help maintain healthy indoor air quality. Mold testing is done on a regular basis, and new HVAC systems are being put in place to enhance air quality. Fresh air exchangers or exhaust systems have been put in place to maintain a healthy learning environment.

Sustainability education is incorporated through numerous college programs: Construction Technology revolves around green building processes. Environmental Science and Water Quality and Sustainable Aquatic Resources address environmental stewardship through education on waterways, as well as units on preservation, restoration, and management of clean water systems and the technologies that store, distribute, treat, and restore water quality through waste water treatment. Engineering Technology coursework introduces students to the concept of using excess energy from equipment coming offline to route excess power to areas that can use it, rather than losing that energy as waste, illustrating that manufacturing processes have become energy harvesting processes. Wind Energy and Turbine Technology courses provide study in wind power generation, distribution, and operations and maintenance, using two college-owned wind turbines.

Students take interdisciplinary courses and general education courses incorporate sustainability as well. The Energy, Sustainability and the Environment course illustrates for environmental, electrical, and HVAC students how systems are linked together, from the environment to building efficiency. Chemistry labs perform microexperiments, which use less chemical and create less hazardous waste.

The 66,000 square-foot garden serves as a living classroom, and provides a model for local garden projects throughout northwest Iowa to illustrate the process of growing, storing, processing, and preparing locally-grown foods within the five-county region of the state. Community patrons, Head Start students, kindergarten through 12th-grade students, and college students benefit from the nutritional, social, and economic benefits of the garden. Garden success relies on volunteers and nonprofit partnerships throughout the area.

Iowa Lakes' green efforts even have gone global. In March 2015, the school sent nearly 100 cloth backpacks to Kitale, Kenya to replace the plastic sacks many students were using to carry books on their several-mile trek to and from school. Moreover, students are involved in maintaining the beauty of the five-county area by helping to assist in cleaning up area lakes, roadsides, and communities. In Clay County, Iowa Lakes soccer players have volunteered at the Spencer Transfer Station in an effort to improve the public's education on recyclables, including what can be recycled and how.

Kentucky

Morton Middle School, Lexington, Ky.

Energy-wise students caring for their community and land

What began 11 years ago as a recycling program has turned into a multifaceted green schools effort to reduce environmental impact and costs, improve student and staff health, and to provide environmental and sustainability education. Morton Middle School serves 762 students, 45 percent of whom are eligible for free and reduced-price lunch. The entire school is involved with paper, plastic, and cardboard recycling, which occurs once a week. The recycling of metal is conducted by Morton's Green Team, and funds obtained are used to supply bird seed for the many bird feeders found on campus, which are designed and built by students in the technology education classroom. Plastic lids are taken to a company in Evansville, Ind. to turn into furniture for the outdoor classroom. Partners supporting the outdoor classroom include Lowes, Home Depot, Lexington Catholic High School, Eagle Scouts, and Adopt-A-Tree.

Morton monitors energy costs by conducting monthly energy audits; working with the NEED Project and E=USE; and providing friendly reminders to the staff that it is important to turn off lights, close windows, and shut off computers and personal appliances when not in use. Morton met with the district environmental engineer to upgrade the school's lighting fixtures, and currently has an ENERGY STAR Portfolio Manager score of 75. The school puts money earned from energy saving endeavors from years past into a fund for new sustainability projects. The school has reduced

its greenhouse gas emissions by 29 percent, and energy use by 49 percent over six years. Morton was the first middle school in Fayette County to initiate a no-idling campaign, and does not use water for outside irrigation.

Morton's Wellness Committee has been in place for several years, and developed a plan for the school. The school no longer houses candy and soda vending machines, although it sells water. The school also participates in the spring World Fit Campaign annually, during which all students and staff walk regularly, and time walked is monitored and recorded. Morton oversees both boys and girls clubs that teach self-help skills, communication, and self-confidence; two clubs set up for peer mentoring; and a Girls on the Run program. It has a school nurse and a behavioral therapist. The school implements IPM, an asthma management plan, and an indoor air quality program.

The school has two raised garden beds where tomatoes, strawberries, catnip, and mint are grown. Students are able to take home the produce, and also use it to feed the school pets. Chickens are raised in classrooms as an observational tool, and once they are mature enough, are transferred to a teacher's chicken coop, where students are encouraged to continue to care for the chickens and are able to take the eggs home to eat.

Each content area teacher offers opportunities to write and conduct hands-on experiments on such topics as deforestation, pollution, water quality, energy, and botany. Students in both the seventh and eighth grade learn how to write grants, including the ones that obtained a water bottle refilling station, power strips, and a butterfly garden for the school. Language arts classes in all grade levels commonly use the outdoors to read and hold class discussions.

Morton has partnered with both Trout Unlimited and Food Chain to learn about the nitrogen cycle, life sciences, and aquaponics cultivating three trout farms. After the students have raised trout in the classroom from eggs to fingerlings, the fish are released in a cold water stream at the Red River Gorge. Morton has teamed with Bluegrass GreenSource to learn about water quality, air quality, recycling, and energy efficiency. The school participates in the Kentucky Green and Healthy Schools nine goal program, and also has recently partnered with a local elementary school to mentor in their green schools efforts, such as caring for a trout farm and rebuilding their rain garden.

Louisiana

Belle Chasse Academy, Belle Chasse, La.

A world-wise military community building a strong green culture

Rising above the surrounding neighborhoods in the epicenter of the Navy Air Station Joint Reserve Base community in Belle Chasse, La., Belle Chasse Academy's presence as a diverse learning space and environmental leader is indisputable. Dozens of newly planted citrus trees and plants are scattered throughout the open grass, filling the space between brick buildings. Multiple victory and math gardens bloom with fresh, organic fruits and vegetables cultivated and harvested by students. The hydroponic greenhouse and composting stations are full of movement as students, teachers, and garden affiliates fill the space with educational dialog and hands-on learning activities. In these spaces, Belle Chasse students are immersed in the concept of environmental sustainability, becoming active in a movement that is global in its reach.

Belle Chasse is a Type II military dependent Title I kindergarten through eighth grade charter school that serves 1000+ students each year, of which over 46 percent are eligible for free and reduced-price lunch. The school serves a minority student population that has special and unique needs — military children, and by extension, their families, residing in all five parishes of the greater New Orleans area. Students arrive at Belle Chasse from all over the world, and represent almost every ethnic heritage. This rich diversity of background, both educational and social, coupled with the strong sense of unity and pride fostered by the shared experience of familial service to country, make the learning community uniquely world-wise and inquisitive.

A perennial and overarching challenge faced by Belle Chasse is this highly mobile and ever-changing population. This mobility not only presents challenges to yearly academic growth and sustainment of achievement levels, but it challenges the development of a strong school community and culture. This inspired Belle Chasse to create distinguished and collaborative programs in health and nutrition, environmental sustainability and education, parent involvement, and 21st century after-school learning. The school is in a unique position to empower its mobile student population with skills that will be applied to future communities of which they are a part.

In unison with its 21st century learning goals and funding from multiple grants, Belle Chasse scaled its robust and transformative green school initiative. Through its farm to school and farm to table allocation, Belle Chasse increased school and community knowledge and choice; expanded community partnerships with more

than fourteen nutritional and environmental organizations; developed a hands-on STEM-focused experiential learning curriculum; and reduced energy usage and greenhouse gas emissions. Belle Chasse retrofitted more than 83 percent of its light fixtures with motion sensor lights and replaced 35 percent of paper towel dispensers with hand dryers, reducing its energy consumption significantly in just one year. In 2016, the school began tracking resource use in EPA's ENERGY STAR Portfolio Manager.

Belle Chasse built a year-round hydroponic greenhouse for students to grow and sell produce to local Plaquemines Parish restaurants and farmers, reinforcing the link between income generation and sustainability efforts. The school's eighteen ground-bed victory garden yields local, organic Louisiana harvest served as a part of its Harvest of the Month program to every student in the building. Adjacent to the victory garden is an integrated math garden, equipped with a unique shaped bed for each grade level and designed as an outdoor classroom immersion learning tool for all math levels. In use of this garden and environmental learning space, academic coaches, in partnership with the school's classroom educators, created a holistic, STEM-focused curriculum explicitly to teach sustainable lifestyles and environmental responsibility.

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Under the leadership of a full-time garden coordinator, Belle Chasse's Gorilla Green Team developed and implemented a student-driven recycling initiative that now diverts over 4,441 pounds of paper and cardboard from the landfill every month. The Gorilla Green Team also oversees the collection and supervision of leftover cafeteria food that is composted and employed to nourish the gardens. A vast majority of students live within the vicinity of the school in on-base housing, so the school institutes Safe Pedestrian Routes. Some 50 percent of students ride a bike or walk to school and over 33 percent take the bus.

Belle Chasse strives to support the health and wellness of its students and staff. The school has limited exposure to potentially harmful chemicals, reducing pesticide use by over 36 percent over the past year, while completely eliminating their use in the various school garden initiatives. Additionally, 46 percent of the cleaning products used at Belle Chasse are Green Seal certified. The school actively reduces asthma triggers on campus by prohibiting the use of nitrite aerosols, ensuring HVAC equipment is dust and mildew free, and maintaining a smoke-free campus. An integral partnership with USDA Foods and the Department of Defense Fresh Fruit and Vegetables Program enables the school to serve students at least

six healthy offerings per day, all of which are taught explicitly through the MyPlate nutritional curriculum.

Belle Chasse engages multiple partners and programs that help support its health initiatives for a diverse population, including providing mental health through two licensed therapists through the Military and Family Life Counseling Program. These counselors visit the classrooms as well, introducing new students to their teachers, throwing a Hail and Farewell celebration for students leaving, and fostering collaborative workshops. Belle Chasse Academy's counseling, anti-bullying, and character development initiatives permeate the school culture, creating an environment that is safe and inclusive.

There are multiple instances where Belle Chasse integrates environmental and sustainability concepts throughout the curriculum. In kindergarten, students investigate how their choices affect the people, places, and things around them. First grade students evaluate ways in which people rely on the environment to meet the basic needs of food, clothing, and shelter. They examine how rivers and waterways were a vital component to human life in the early Americas, and how pollution throughout the years has affected modern human health. Second grade students investigate interdependence of various habitats and regions, as well as the needs of individual organisms, particularly plants. Third grade students explore civic responsibility and discuss how they can be stewards of the planet, specifically addressing endangered and invasive species. Eighth grade students learn how human actions and natural processes have modified the coastal regions in Louisiana and throughout the Gulf Coast. Each unit concludes with an assessment, where students analyze source articles, visuals, charts, and graphs. They craft essays that analyze arguments surrounding environmental and sustainability concepts.

Mayfair Laboratory School, Baton Rouge, La.

An environmental science themed magnet in the heart of Baton Rouge

Mayfair Laboratory School is located in the heart of the East Baton Rouge Parish School System, and has a unique curriculum partnership with the University Laboratory School, which is located on the campus of Louisiana State University. Established in 2013 as a kindergarten through third grade lab school, Mayfair created a plan to add a grade level each subsequent year, through eighth grade by the year 2019. Mayfair is home to 347 students in grades kindergarten through sixth, of which 67 percent qualify for free and reduced-price lunch. Mayfair is classified as a Title I school, and its student body comprises a diverse and eclectic mix of racial and ethnic cultures.

Mayfair's magnet theme is environmental science, and it is the only middle school in its district to offer an environmental studies course developed from the high school AP environmental science course. The school's outdoor learning areas and gardens are interdisciplinary, supporting writing, literature, science, math, horticulture, and environmental awareness. Students gather data, examine soil, learn about resource management, and study sustainable habitats.

Student-led projects have led to the establishment of programs for composting, recycling, and gardening, including 30 student-planted garden beds, trees, shrubs, indigenous plants, and vertical tower gardens, as well as a butterfly garden. The school partners with the LSU Agricultural Center, Scotts Miracle-Gro Company, Trader Joes, Whole Foods, a master gardener, Louisiana East Girl Scouts, and the 4-H Club Extension. These community partners and parents provide volunteer hours, materials, and monetary donations to aid in the school's conservation efforts, health initiatives, and environmental studies program.

Mayfair has several energy conservation efforts in place. Classrooms and restrooms are equipped with automatic lighting that shuts off after 15 minutes of inactivity, and the school has upgraded lighting fixtures to cooler, more efficient bulbs. The school has purchased energy-efficient printers, copiers, and fax machines that automatically power down when not in use. All computers are equipped with timers that automatically shut down at night. Mayfair has outdoor wings that allow opportunities to turn off lights and air conditioning units and open the doors when the weather is nice to conserve electricity. These measures, along with others, have enabled Mayfair to reduce overall energy consumption by over 20 percent and greenhouse gas emissions by over 25 percent in two years. Mayfair has twice earned EPA's ENERGY STAR award (in 2014 and 2016) for its resource conservation efforts.

Faucets in the restrooms have motion sensors, which control the amount of water that flows with each use. Mayfair has reduced waste by 40 percent through use of Google documents and a one-to-one laptop program. All teachers in grades three through six have online Google classrooms where they post digital assignments. Students have access to homework assignments, class projects, in-class assignments, and upon completion can turn them in using the Google platform.

From the chemicals used on campus to extracurricular activities, Mayfair takes the health and wellness of its students and staff seriously, and has put into place several

measures in support. The school's IPM plan uses only student-made natural ingredients as pest deterrents in the garden, and 75 percent of the commercial products on campus have been certified by EcoLab. Students amend their garden soil with compost they have made, and gather pine straw for mulch and ground covering for use in raised beds.

Mayfair students in grades kindergarten through fifth receive 150 minutes of physical education per week, and in grade six they receive 250 minutes. They spend the majority of exercise time outdoors, incorporate music, and are in constant movement. Mayfair students enjoy visits from BREC on the Geaux, a traveling recreation program developed by the Recreation and Park Commission for the Parish of East Baton Rouge that is operated from two 14-foot trucks loaded with a variety of equipment and games for all ages. Mayfair has a swim team and offers lessons each spring. Students participate annually in Body Walk, a 35-foot by 45-foot enclosed walk-through exhibit representing the human body, with classroom activities for use before and after the students' walk through.

Louisiana State University, Baton Rouge, La.

Tigers hone their green skills in the Bayou State

Louisiana State University (LSU) is located in a bustling urban setting and occupies over 2,000 acres in Baton Rouge, La. This community has made a firm and increasing commitment to environmental sustainability, to human health and the wellness of the student population, and to sustainability in academics. In 2008, LSU hired a full-time campus sustainability manager to oversee all such activities; today that staff is a multi-member team dedicated to implementing a wide range of efforts.

To ensure the broadest possible buy-in and solicit diverse ideas and perspectives, the Campus Sustainability Office has led the effort to assemble a Campus Committee on Sustainability, a group whose purpose is to set short and long term sustainability-related goals. Members of the Committee represent all facets of campus life: the President's Office, Student Senate, Staff Senate, Faculty Senate, Athletic Department, Campus Life, Office of Facility Services, Greek Life, Parking and Transportation, Residential Life, University Recreation, and Planning, Design, and Construction.

The Committee's responsibilities encompass the areas of energy efficiency, green building, landfill diversion and recycling, transportation, food, procurement, forests and grounds, and communication, with subcommittees established for each area. It is the role of each subcommittee to identify goals for incorporation into a Strategic

Plan for Sustainability. These goals also inform the update of the university's upcoming Comprehensive and Strategic Campus Master Plan – a plan that will guide development and capital investment on LSU's flagship campus for the next decade, and beyond.

To shore up progress and keep building momentum toward its strategic vision, the Campus Committee on Sustainability has set both short and long-term sustainability goals. These include achieving an 80 percent reduction in greenhouse gas by 2050; a 30 percent decrease in energy use in campus buildings by 2025; a 50 percent annual recycling rate; and a 100 percent recycling rate for construction and demolition waste. The Campus Sustainability Office also works actively to engage senior administration at LSU on a regular basis, and communicates progress by providing an annual sustainability report and presentation to the President's office.

In recent years, LSU has been the recipient of many state and national awards and honors for its sustainability efforts. Examples include Environmental Leadership Awards from the Louisiana Department of Environmental Quality for the years 2010, 2011, 2015, and 2016; Bicycle Friendly University in 2016; Tree Campus USA for the consecutive years 2012—2015; and Green Sports Alliance Award Recipient in 2016.

LSU also has been selected for several sustainability-related grants in the past few years, including three $10,000 awards from Keep Louisiana Beautiful for sustainability-related improvements and projects on campus. The LSU student body voted to establish a sustainability fund to be used for projects related to sustainability that will be proposed by students, faculty, and staff.

The role of the Campus Sustainability Office ranges from managing solid waste and recycling for LSU, to measuring and tracking energy and water usage, to working with academic partners to ensure a connection between operations and education at LSU. For example, each semester, through a partnership between the Environmental Management Systems degree program (part of the College of Agriculture) and the Campus Sustainability Office, students from the Environmental Management classes build green skills through classroom-based and project-based learning, including volunteering to help with sustainability-related projects like the GameDay Recycling Challenge, which offers higher education institutions the chance to compete in reducing and recycling the waste generated at home football games. LSU was the national first place winner of the GameDay Recycling Challenge in 2015.

When it comes to efficient operations and environmental sustainability, LSU's efforts encompass smart growth and transportation, such as electric car charging stations and ride- and bike-share programs, recycling and composting, energy efficiency and

green building, and natural resources protection. The school is home to the LSU Lakes, the renowned Campus Forest, and an Endow-an-Oak program.

The Campus Committee for Sustainability includes a strong focus on health and wellness for the entire Tiger family, and particularly for students. To promote active lifestyles and green building awareness, and foster sustainable practices, LSU offers healthy choices for the community. For instance, the LSU Student Health Center offers a wide array of programs to promote physical and mental health, including diagnostic imaging, immunization, a pharmacy, a women's clinic, primary care services, a laboratory for processing test results, and specialty clinics. Counseling and psychiatry services also are offered, as well as programs to treat students who have experienced domestic abuse or sexual assault.

LSU Dining offers green, local food choices, as well as a seasonal farmers market, and the University Recreation Center has many health and exercise related programs, including an outdoor adventure program for students. In addition, the 15-member team at the Environmental Health & Safety Office is dedicated to ensuring the health, safety, and wellness of all LSU students, faculty, and staff.

The university has a range of degree programs, academic and research centers, and even clubs and other extracurricular organizations that support innovative environmental and sustainability education, including efforts centered on STEM subjects; that foster civic skills; and that help students connect with and pursue Green Career Pathways. Sustainability themes in the academic program range from research focused on Louisiana's diminishing coastline to forestry, renewable resources, climate change, and beyond. The School of the Coast and Environment, the College of Agriculture, the School of Plant and Soil Systems, and the School of Renewable Natural Resources all offer students top quality education and research opportunities in the field of sustainability and environmental protection.

Coastal research at LSU is a special highlight. More than 200 faculty members at LSU are currently involved in coastal-related research, and LSU has more than 450 coastal-related grants totaling $73 million. This means that many of LSU's researchers are focused on one of the state's leading environmental problems, paving the way toward real solutions for a very real and ever-worsening problem.

Through efficiency and sustainability in operations, through an unwavering commitment to the health and well-being of the student population and the broader campus community, and through offering a wide range of studies in sustainability-

related areas, LSU has committed to promote sustainability in ways that produce local, state, national, and even global results.

Maryland

William Tyler Page Elementary School, Silver Spring, Md.

Cross-curricular learning about the earth and its resources

At Page Elementary School, each classroom has a representative from the green team who acts a Green School leader for their peers. Their responsibilities are to ensure lights are off, blinds are down at the end of the day, and computers are shut down properly after using the computer lab. Team members ensure there are stickers next to light switches, and that others are recycling in classrooms by posting signs in bins about what can be recycled. Third to fifth grade green team ambassadors monitor breakfast and lunch recycling procedures. The school has achieved a 40 percent diversion rate. The members of the green team spread this message throughout the school each day, and teach their peers about conservation. The green team has been in existence since 2005, and has grown from five students to some 100 students in a school of 410 students, where over 50 percent are eligible for free and reduced-price lunch. The school has an ENERGY STAR Portfolio Manager score of 90, and purchases 33 percent wind energy.

At Page, signs are in place to remind students to reduce water use. At lunch, students dump the unused portion of their water bottles into buckets, and use the liquid to water flowers. The school uses 75 percent Green Seal certified cleaning products and IPM procedures, and has an indoor air quality management plan in place.

All Page students learn about the Earth and its resources through participation in multiple venues. At every grade level, students engage in authentic collaborative environmental learning experiences that integrate math, science, reading, social studies, and the arts. Research and community service projects are completed by all students throughout the year. Students prepare for the school's Earth Day celebration all year long by learning about global warming and environmental issues in music, art, physical education, and their core classroom instruction. The new birdfeeders in the courtyard have generated student discourse on the native birds of Maryland and the migration patterns of hummingbirds in several grades, with students writing on a regular basis about the types of birds they observe. Projects taken on by students and staff include weekly environmental announcements; outdoor recycling centers to reduce the trash on the school grounds, creating a safe and pleasing environment; new water fountains; cross-grade level collaborative

environmental lessons; a gardening club; and new planning to increase the school's perennial outdoor learning garden space.

Nutrition education is done in the classroom, during physical education, and through the cafeteria, using the My Plate program and the Montgomery County Public Schools health curriculum. Additional fruits and vegetables have been added to the menu, 100 percent of grains are whole grain, milk is fat-free or one-percent fat, trans-fat and saturated fat is less than 10 percent of calories, and meals are low sodium. Students are required to select fruit or a vegetable with each breakfast and lunch. Page is a participant in the USDA HealthierUS School Challenge, is a Team Nutrition School, and participates in a farm to school program. Teachers do not distribute candy to students, and vending machines are not available to them. Physical education integrates student health and fitness with the environment by participating in Field Day, Girls on the Run, May Mileage Club, and outdoor after-school sports clubs.

At every grade level, students engage in authentic collaborative environmental learning experiences that integrate math, science, reading, social studies, and the arts.

Prekindergarten students explore maps, globes, communities, and animal habitats. Kindergarten students observe a variety of familiar animals and plants to discover patterns of similarity and difference among them. They conduct experiments with worms as part of the living/nonliving science curriculum. First grade reads and learns about endangered animals and their shrinking habitats, what plants require to grow, and how plants help provide the basic needs of people. Students write reports that discuss the challenges many animals face in the modern world. First graders read and write about the earth and actions people can take to ensure the sustainability of the planet. Second grade students research and write about the activities of individuals that can affect the environment. Third graders have planted bulbs and have participated in school grounds cleanup. Fourth grade students learn environmental sustainability through a project-based learning unit called Our Neighborhood, Our Watershed, in which they create a water flow map of their school grounds, identify a water issue, and develop a solution. Fourth and fifth grade students participate in research projects about their carbon footprint and energy sources. Fifth grade students explore an electric circuit and energy conservation.

John Poole Middle School, Poolesville, Md.

Cultivating inspired stewards of the Chesapeake

John Poole Middle School is located in upper Montgomery County, in the Agricultural Reserve, a land area of 93,000 acres of preserved farmland, and rural space in a suburb of Washington D.C. of more than 1,000,000 people. John Poole is a feeder school for Poolesville High School, where the highly regarded magnet program in Global Ecology holds great appeal for John Poole students. From curriculum to school operations, with the help of partners at the high school Global Program, local businesses, and nonprofits, John Poole continues to grow its culture of environmental awareness and sustainability.

John Poole has completed more than 13 years of environmental projects that have been supported by several organizations. Key partners include Snitzer Landscaping, Lowes, Clean Air Partners, Audubon Society, Chesapeake Bay Trust, and the Chesapeake Bay Foundation, which helped complete a series of erosion prevention gardens and the creation of an outdoor classroom. John Poole students have come to expect regular outdoor learning, with opportunities to improve the schoolyard and building sustainability. From water conservation to energy reduction, John Poole students are involved in stewardship. For example, students painted signs over four storm drains on school property to remind community members that what goes into the stream goes into the Bay, while others created designs that surround light switches to remind staff and students to turn the lights off.

The school purchases one third wind energy, has a Portfolio Manager score of 83, and has reduced energy use by 18 percent in just one year. The school has a well-publicized no-idling policy and safe routes to school infrastructure in place. John Poole uses green cleaning and an IPM plan.

John Poole teaches nutrition through health and science classes. In the first unit of seventh grade science, students grow basil hydroponically. During the seventh grade science unit Matter and Energy Flow in Organisms, students obtain information on food and nutrition services in Montgomery County and identify overarching problems. All students maintain a food diary for a week to analyze the nutritional value of a typical week of meals. After completing several labs and class periods of research, students work in teams to design a healthy and affordable school lunch menu. In environmental science classes, students learn about their global footprint as it relates to their food choices. Students study the effects of bioaccumulation in the food chain, and use the Monterey Bay Seafood Watch program to determine the health of their seafood choices. They work with high

school seniors to plan a hydroponics wall that uses recycled bottles to grow herbs. Additionally, vending machines are set on a timer to remain off during school hours.

The school has fostered environmental awareness since its doors opened in 1997 through a tradition of completing environmental stewardship projects every year, with students taking an active role in problem solving and suggesting solutions for issues in the schoolyard. For example, many grade levels and subject areas worked together on research, design, site selection, and completion of the construction of an outdoor classroom. This inquiry-based project put students from every grade level at the helm to determine the school's needs, research materials, and communicate results to teachers. A team of teachers took the information collected and analyzed by students and in turn submitted grant proposals to Lowes and the Chesapeake Bay Trust. John Poole won the Project Lead by Example, and was able to complete the nearly $8,000 outdoor classroom.

At John Poole, an environmental science elective is offered to all seventh and eighth graders, which results in having some 60 percent of the student body immersed in meaningful outdoor learning experiences during middle school. Students design projects that positively affect the ecosystem. The environmental science class collaborates with the high school's Global Ecology program on projects such as hydroponics systems, native gardens, and composting in the cafeteria. Students in the environmental elective know that they will have an opportunity to give back to the school as they plan and implement their projects.

John Poole offers an annual green school trip that engages students in environmental learning in a part of the watershed that is less familiar to them. Students who take part in these trips become green school leaders, who return with more plans to improve the school. Destinations have included the Potomac River, Merrill Center, Meredith Creek, and Smith Island. Green school leaders also travel to the Maryland Green School Annual Youth Summit at Sandy Point State Park for the green school awards and interactive stations. While studying at Smith Island, students brainstorm projects for the school to implement upon their return, including

daily morning announcements, the addition of a no-mow zone, native plantings, and erosion prevention.

Green School leaders completed a mural project that includes animals native to the Chesapeake Bay watershed with the help of a grant from the Chesapeake Bay Trust. They researched, designed, and painted four large columns in the library to depict underwater scenes found in the area. Sixth graders participated in annual spring clean-up, plantings, and trail maintenance. They also completed a series of trans-disciplinary activities that incorporated STEM objectives, culminating in a final presentation during outdoor education. Students complete a variety of service learning projects, including collecting books to be donated to Title I schools; collecting unused school supplies; writing persuasive letters related to environmental concerns; and fundraising for a safe haven for abused, neglected, and stray barn animals.

It is evident that John Poole operates with the environment as the core of its culture. The school provides environmental education in all subjects and at every grade level to ensure that students have a solid foundation in environmental literacy. There is a ribbon of green inspiration that runs through John Poole's plans, community, lessons, and actions.

Minnesota

Edgewood Early Childhood & La ola del lago Spanish Immersion School, Prior Lake, Minn.

Nature, foreign language, and sustainability education for the entire family

The Edgewood School is a community committed to children from infancy to second grade, as well as their parents and caregivers. Home to several programs by different names, including Circle of Friends Preschool, Early Childhood Special Education (ECSE), Early Childhood Family Education (ECFE), and La ola del lago kindergarten through second grade Spanish immersion school (LODL), Edgewood provides over 700 young children and their families a safe and nurturing environment that fosters health and wellness, creativity and innovation, STEM knowledge and engagement, and understanding of and respect for the natural world.

From its inception in 2006, Edgewood School has championed innovative practices that reduce environmental impact, improve health and wellness, and lead to more effective environmental and sustainability education. This task is made easier as Edgewood is part of Prior Lake—Savage Area Schools (PLSAS), the only district in the state of Minnesota to have an environmental education program that grows with students from early childhood to high school. Like the rest of the PLSAS, Edgewood

uses an interdisciplinary approach to instruction and learning focused on inquiry and real world problem-solving in the 21st century, applying hands-on STEM practices to projects and field experiences related to the environment.

During the 2014-2015 school year, Edgewood created a nature preschool option within Circle of Friends, using a place-based education philosophy where the natural environment provides context for supporting STEM learning. In nature preschool, students spend as much time as the weather allows engaged in outdoor learning and play. Indoor classroom time is viewed as an extension to outdoor exploration, incorporating natural materials and providing opportunities for students to follow up on their experiences. Traditional Circle of Friends preschool classes likewise have adopted the district's early STEM (E-STEM) initiative, increasing outdoor learning and play opportunities in all preschool classrooms. The ECSE program is part of both traditional and nature preschool programs, providing inclusive learning opportunities for all students in both indoor and outdoor classroom environments.

An underused green space was turned into a nature classroom, incorporating an existing butterfly garden. This classroom space was designed intentionally to provide students with a variety of opportunities and experiences that foster connections between students and the natural world.

While Edgewood's ECFE program always has provided parents and caregivers with the support and information necessary to create healthier environments for the well-being of all children and families, its efforts have become more intentionally sustainability-focused over the past ten years. ECFE offers classes with titles such as Think Green and Tiny Footprints that reinforce sustainable decision making in households. The school hosts family discovery opportunities emphasizing environmental learning. Just as importantly, ECFE models earth friendly practices by rethinking curriculum, reducing consumables; replacing plastic manipulatives with natural parts, reusing and repurposing what is on hand, and purchasing toys and other items made with recycled products.

La ola del lago, a Spanish immersion elementary program, was begun in 2014-2015 school year with four kindergarten classes. Spanish immersion incorporates E-STEM learning while working closely with the school district naturalist. As an immersion school, LODL incorporates all facets of the E-STEM curriculum and presents it to the students in the target language.

To support sustainability and environmental education in all of Edgewood School programs, an underused green space was turned into a nature classroom, incorporating an existing butterfly garden. This classroom space was designed intentionally to provide students with a variety of opportunities and experiences that

foster connections between students and the natural world. The various early childhood programs use outdoor classroom spaces and the butterfly garden daily to provide nature play and learning experiences. All classes regularly use the "tree stump corner" to hold morning meetings and outdoor lessons. The school grounds are home to a nature trail with interpretive posts that educate about plants and animals that reside on the school grounds.

LODL and Circle of Friends preschool students, as well as ECFE families, also visit the district's environmental learning centers at McColl Pond, Hidden Oaks Middle School, and Jeffers Pond, as well as community parks and trails to further extend explorations and engagement in E-STEM learning.

To foster collaboration across all programs and provide intentional opportunities to incorporate environmental and sustainability education, an Edgewood E-STEM committee was formed. Committee members discuss buildingwide opportunities for supporting E-STEM learning, organic waste and recycling programs, and wellness projects. As a result of this collaboration, staff are more conscious of their environmental impact and have been able to reduce energy and water consumption and waste production considerably, as verified by MN B3 Benchmarking and in an ENERGY STAR Portfolio Manager score of 97.

Edgewood School incorporates daily outdoor learning experiences for all students. Common activities include nature walks, snowshoeing, fishing, sledding, and animal tracking. The school administration advocated for the addition of a school social worker and health aide to the staff, both of which are now onsite each day. Outside consultants are tapped to share expertise and knowledge with the entire spectrum of students on matters such as dental health, personal safety, bullying prevention, physical strength and endurance, and sleep. Edgewood School is home to a school garden and participates in a farm to school program. Recess is held before lunch. Teachers offer brain breaks, yoga, and dancing in the classroom, and they oversee a family nature club.

Edgewood School is a collaborative effort, involving community, family, business and education stakeholders in its mission to ensure the school is safe, healthy, and sustainable in every aspect and avenue.

Pilot Knob STEM Magnet School, Eagan, Minn.

LIVEGREEN supports low- and no-cost conservation efforts

Pilot Knob STEM Magnet School serves a diverse school community with 18 languages spoken; 22 percent of students have limited English proficiency, and 43 percent qualify for free or reduced-price lunch.

Pilot Knob 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. Pilot Knob has a LIVEGREEN Club consisting of third and fourth grade students and a teacher. The team helps implement low-cost or no-cost strategies to reduce energy use, promote recycling and composting, and conserve resources. LIVEGREEN goes beyond a standard energy-reduction program by incorporating right-sizing waste streams, recycling, composting, green cleaners, diesel emissions reduction, paper reduction, behavioral changes, and engineering controls into its initiatives. Through sustainability efforts, Pilot Knob has avoided more than $17,000 in utility costs since 2009. It tracks resource use in ENERGY STAR Portfolio Manager, and currently has a score of 88.

Since 2009, Pilot Knob has had single-stream recycling schoolwide and organics collection for lunchroom waste. In collaboration with Dakota County, the school conducted a waste sort in 2014. The results informed the school community of what it was getting right and what it needs work on. To help students avoid confusion, the school has bins labeled with posters and pictures of what goes where. Through a grant provided by Dakota County, Pilot Knob received all new bins in the cafeteria that are user-friendly even for the youngest recyclers. The school has an 80 percent recycling rate.

LIVEGREEN events promoted by the LIVEGREEN Club are scheduled throughout the school year and include MOVEGREEN, Lower the Lights, LIVEGREEN Week, Earth Day and compost sales. LIVEGREEN is always looking for smart, green, and efficient practices to incorporate into the school. The LIVEGREEN Club promotes

recycling and composting, water reduction, and energy conservation. Pilot Knob's principal visits every classroom and teaches a lesson about energy conservation and waste reduction. Students are taught how much soap and hand drying paper is necessary and not wasteful. "One, two, three is enough for me" is the slogan that students use when getting paper towels to dry their hands.

Two water-bottle filling stations were installed at the elementary in 2016. The hydration stations deliver a clean water bottle fill and minimize dependency on disposable plastic water-bottles. Teachers and staff also have easy access to a purified water system to fill water bottles. The school has reduced domestic water use by 37 percent over seven years.

Through many activities and partnerships, the district works hard to improve the health and wellness of students and staff. Thanks to a generous grant from C. H. Robinson Worldwide, Inc. and the Let's Move Salad Bars to Schools initiative, Pilot Knob operates a salad bar that features a variety of fruit, vegetable, whole grain, legume, and low-fat dairy options during breakfast and lunch. The school was a HealthierUS Challenge Silver awardee in 2011. All Pilot Knob students spend 90 minutes per week in structured physical education and another 150 minutes at supervised active outdoor recess, unless the temperature is below -10 degrees.

All Pilot Knob students participate weekly in a STEM specialist class where the curriculum focuses on technologies that improve the environment. Students learn about wind and solar power, and participate in activities that demonstrate how such technologies work to produce clean energy. In the STEM Sparks classes, students select courses that teach about solar power and engineering. Students participate in field trips to Dodge Nature Center, and all Pilot Knob teachers worked with the University of Minnesota on a Monarch Project.

All 408 Pilot Knob students spend time in the school garden planting, tending, and harvesting, and then they enjoy eating the fresh vegetables and herbs. Excess food is donated to a local food shelf. Pilot has an outdoor classroom complete with tables and benches for students and teachers. Behind the school is a wooded area with a trail that teachers use to take students into the woods to explore nature. Students use this area outdoor for science, forestry, and wildlife lessons and activities.

Bemidji State University, Bemidji, Minn.

One of the nation's first environmental studies programs

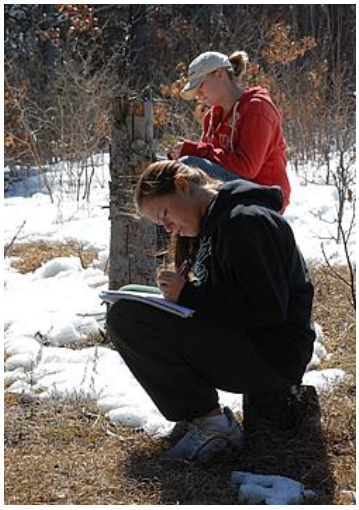
Ever since the development of its very mission statement, Bemidji State University has been dedicated to a sustainable future of our communities, state, and planet. The school's stated aims include promoting service to others, preservation of the Earth, and respect and appreciation for the diverse peoples of our region and world.

Bemidji State University (BSU) is a four-year, public, liberal arts institution that is located in a community of more than 60,000 residents. Founded in 1919 to meet an urgent demand for teachers, BSU was a major pathway to public higher education for northern Minnesotans throughout most of the 20th century. BSU now serves about 4,500 undergraduate and 500 graduate students from across Minnesota, surrounding states, and around the world. Students have multiple opportunities to learn about, experience, and reflect on the university's official Shared Fundamental Values: environmental stewardship, civic engagement and leadership, international and multicultural understanding, and the belief in the power of the liberal arts.

The school is a signatory of the American College and University President's Climate Commitment (ACUPCC), pledging to become a carbon neutral institution. A campus sustainability director was hired in 2008 to help support and promote the goals of the ACUPCC, as well as coordinate the green fee, a $5.00-per-semester student fee to promote campus environmental projects. In 2015, students agreed to increase the green fee to $7.50 in order to support more environmental projects and initiatives. The Sustainability Office is heavily involved in energy, water, and waste reduction strategies, and is a regional leader in the campus sustainability movement.

Bemidji State University surpassed the ACUPCC interim carbon reduction goal of two percent by 2015, reducing emissions by three percent from a 2010 baseline. Green building design has been a factor; BSU has constructed one ENERGY STAR and one LEED-certified building within the past two years. Most recently, the Sustainability Office managed a project with several partners, including Leech Lake Tribal College, Rural Renewable Energy Alliance, and Northwest Technical College, to build a fossil fuel-free fish house, the first of its kind in the nation. In addition, BSU has made considerable progress to reduce waste and increase recycling through innovative programs: Donate, Don't Dumpster encourages students to donate gently used items that otherwise would have gone in the dumpster at the end of the spring semester. Donated items go into BSU's FreeStore, which has been open to all students and operated by the Sustainability Office since 2010. To date, the FreeStore has kept more than 10,000 items out of the landfill.

Water conservation devices such as low-flow showerheads and faucets were installed in BSU's high-use campus buildings in 2010. Since their installation, more than 15,000,000 gallons of water have been saved. In 2015, the BSU Student Senate unanimously passed a bill calling for the elimination of the sale of bottled water on campus and promotion of refillable water bottles. To date, the refilling stations have saved more than 50,000 gallons of bottled water, reducing the high energy-consuming packaging, transportation, and water demands of the bottled water industry. Also, the university has worked very hard at expanding and streamlining recycling efforts on campus. These waste management efforts have led to a 30 percent reduction in waste production and a doubling of campus recycling since 2006.



Many BSU programs and initiatives are dedicated to improving the health and wellness of students, faculty and staff. BSU has a broad-reaching student wellness initiative, The Best You @ BSU, and a very active Living Well, Working Well committee. The on-campus Gillett Wellness Center and the popular Outdoor Program Center provide a plethora of opportunities to promote physical and mental wellness. The Living Well, Working Well committee at BSU helps to establish a healthy workplace, empower and encourage employees to be well, and support and facilitate healthy choices. The on-campus Gillett Wellness Center offers state-of-the-art equipment and facilities for students, faculty, staff, and the public, and gives students free access to cardio equipment, a weight room, a jogging track, activity courts, and racquetball courts. In addition, the Outdoor Program Center is dedicated to providing the community with outdoor experiential learning opportunities that encourage enjoyment of the outdoors, exploration of personal potential, and the development of a respect and understanding of the Earth's natural systems and responsibilities within them.

Wellness is even a focus of the Sustainability Office, whose staff and students created a distinctive sustainability model that includes a wellness component and is in use elsewhere across the nation. An organic community garden, a bike-share program, and classes that teach traditional skills are just some examples of programs offered by the Sustainability Office.

In 2016, BSU agreed to stop spraying pesticides on its academic buildings. Using nontoxic, plant-based pest control alternatives will have both positive effects on the environmental health as well as the human health of the campus community. Moreover, at the impetus of students, BSU banned all use of tobacco products on campus grounds. Use of air purifying plans has improved indoor environmental

health, and for the past several years, the Sustainability Office has given away more than 100 house plants for use in offices across campus.

The school has an enduring commitment to environmental and sustainability education, which includes one of the oldest environmental studies programs in the nation. The programs housed in the Center for Environmental, Economic, Earth, and Space Studies offer interdisciplinary flexibility that permits students to gain the skills required to tackle important climate change-related problems, including specializations in ecosystems studies, environmental policy and planning, environmental toxicology, environmental management, and geohydrology. A required liberal education course titled People and the Environment and an active sustainability-focused student organization, Students for the Environment, also help lead the way to a more environmentally literate citizenry. The People and the Environment course not only educates students on the ecosystem on which humans depend, but also integrates understanding of the social systems needed to address complex global problems. The course facilitates an opportunity for students to interact with the community through a service learning assignment.

In 2005, BSU signed the Talloires Declaration, a 10-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations, and outreach at colleges and universities. In 2016, an academic minor in sustainability was added. This course of study will draw on the importance of service learning, and will allow students to learn, through hands-on work in the community, how to effectively address sustainability issues in the wider world.

Just this past year, BSU initiated an EcoCamp for first- and second-graders. Several BSU students were involved in the planning, coordination, and facilitation of activities to teach local youth about the Earth. The camp will expand to include a third- and fourth-grade EcoCamp in 2017. At BSU, sustainability always has been student driven and student led. Members of the campus community take pride in that and strive to ensure that the campus' longstanding Students for the Environment club remains a hub of active engagement in both campus and community sustainability initiatives.

Missouri

McKelvey Elementary School, Maryland Heights, Mo.

Four time ENERGY STAR

McKelvey Elementary has an active Green Team of staff and students. The club meets weekly to lead recycling efforts, encourage green living, and identify and research problems and implement and measure solutions. For example, its work

includes recycling, composting, clean air, energy conservation, wind power, solar power, and solar panels. This student-led initiative has created many low-cost and easy to implement changes that result in resource conservation and utility costs savings and healthier learning environments.

As McKelvey updates its aging infrastructure and works to reduce environmental impact in operations, it incorporates American Society of Heating, Refrigerating and Air-Conditioning Engineers Advanced Energy Design standards and also LEED Operations and Maintenance principles. The school received the ENERGY STAR for 2013—2016, after having brought its Portfolio Manager score up to 89 from 59. Examples of school improvements include new HVAC equipment that is more energy efficient and improves indoor air quality, providing more fresh air ventilation when carbon dioxide levels are elevated. McKelvey has upgraded HVAC filters to a higher quality filter that traps more particulates, while allowing for greater efficiency of the equipment.

An onsite solar array generates about five percent of the school's energy needs, and students use the energy data for real-world project-based learning opportunities. McKelvey was one of the first schools in the state to use compostable plates and to institute a commercial composting program, piloting the program with other area schools, which later became a districtwide composting effort. The McKelvey community created a video to instruct all district schools on the composting process and received recognition from the Missouri Recycling Association.

McKelvey curriculum, lessons, and professional development place a heavy emphasis on the education of the whole child. Staffers monitors the safe learning environment; proactively create healthy policies and practices with student input; and provide health services, counseling, and lessons that involve environmental and sustainability concepts.

McKelvey Elementary works to instill the values of global citizenship in students, preparing them for life in a healthy, sustainable learning environment. McKelvey curriculum, lessons, and professional development place a heavy emphasis on the education of the whole child. Staffers monitors the safe learning environment; proactively create healthy policies and practices with student input; and provide health services, counseling, and lessons that involve environmental and sustainability concepts.

McKelvey works to strengthen family education and relationships, while creating and maintaining community partnerships to focus on unique practices. This includes specific learning opportunities, such as fourth-grade students learning about food security for a growing population with The Bunge Corporation. Second grade students delve into a deeper understanding of soil and compost. Students in kindergarten through fifth grade work with the Junior Achievement program, which is

focused on preparing young people to succeed in a global economy through educational and motivational hands-on and relevant learning.

Parkway North High School, St. Louis, Mo.

Student-driven initiatives make a whole school green

Parkway North is a school that has a deep-rooted commitment to whole school sustainability. The school has worked to make its physical place, organizational culture, and educational program more sustainable. For many years, the school has been on the forefront of integrating environmentally preferable procedures into the everyday operating practices of the building. In most cases, these enhancements have been a direct response to student-driven initiatives, ranging from single-stream recycling programs, community clothing drop-off boxes, a shoe drive water project, composting for food scrap and compostable serviceware, river cleanup crews, rain gardens, and native prairie gardens.

Energy related projects include the installation of LED lighting upgrades for outdoor spaces with controls that allow the fixtures to dim late at night when no movement is detected on the parking lots. Parkway North has installed a 25 kilowatt solar photovoltaic array that is ground mounted, so students are able to see up close what a functioning array looks like. Parkway North uses several compressed natural gas school buses that are able to transport students with fewer emissions than traditional diesel buses. The school is working hard to implement a master plan that involves major replacement of HVAC equipment to include chillers, new variable air volume boxes, and demand control ventilation. Improvements made so far have brought the school's ENERGY STAR Portfolio Manager score from 5 to 48, reduced energy use by 25 percent, domestic water consumption by 37 percent, and irrigation water use by 45 percent. Using LEED Operations and Maintenance and New Construction as a reference, Parkway North continues to pursue additional initiatives that are applicable to credit categories where it has not yet achieved.

While the school works hard to reduce the amount of resources it uses to operate the school, it also seeks to create a healthy environment that is conducive to learning. Its district safety specialist and certified industrial hygienist work to make sure the Parkway North indoor environment is as safe and healthy as the outdoor environment that students and staff are working to preserve. This includes actively managing proper use of chemicals in the district, and using practices such as IPM and green cleaning to minimize the presence of hazardous materials inside buildings. Parkway North has installed higher efficiency and higher quality air filters on its HVAC equipment to eliminate as many particulates from the air as possible.

In addition to initiatives to create a healthy school environment, Parkway North offers programs that instill health and wellness in the community. This includes offering local farm grown produce in the cafeteria, and blocking out thirty minutes during a week dedicated to school climate. Parkway North students and administration create videos and power points on topics ranging from accepting others with differences to diminishing homelessness and hunger. Students are guided through teacher- or peer-led discussions, expressing concerns or creating action plans on how to create a better community. The school nurse connects students to health and social resources to live a healthy life, and the wellness coordinator leads after-school yoga and stress management sessions, while physical education includes climbing, ropes courses, outdoor sport skills, mountain biking, and roller blading. Parkway North hosted the tenth annual Let's Move in Parkway North event in May 2016, which attracted over 1,300 community members.

While these operational improvements are impressive, Parkway North believes that the deep connection its educational experiences offer students is actually what is driving much of the change. The school has been driven to create a generation of sustainability natives. Parkway North not only has multiple award-winning environmental clubs as demonstrated by its Lexus Eco-Challenge and Envirothon teams, but also integrates these learning opportunities throughout its curriculum, which extends beyond science and into all areas. For example, the Parkway North English curriculum requires a recycling project, and its physical education department has a demonstrated commitment to outdoor education. Faculty members engage in protecting the planet as well through their regular professional development with the Missouri Department of Conservation or Botanical Gardens.

> Improvements made so far have reduced energy use by 25 percent, domestic water consumption by 37 percent, and irrigation water use by 45 percent.

All students and staff throughout Parkway North are immersed in environmental science as a way of life rather than as a single course taken once in a four-year high school career. Nevertheless, Parkway North also offers an AP environmental science course that is offered for dual credit through the University of Missouri-St. Louis, as well as a general environmental science course. Students are given multiple opportunities to read articles, listen to news stories, research various topics, engage in debates, and give oral presentations on such topics as carbon footprint, use of natural resources, and the equitable distribution of these resources throughout the world.

Maplewood Richmond Heights Middle School, Maplewood, Mo.

Learning expeditions at the heart of sustainability education

Maplewood Richmond Heights Middle School (MRHMS) is located in the city of Maplewood, which received the National Green City Award as the result of a large and concentrated effort from Maplewood Richmond Heights Middle School and its district. It also is the very first Green Dining District in Saint Louis. MRHMS has worked hard, with support from the communities of Maplewood and Richmond Heights, to develop a green school that upholds the district cornerstones of scholarship, stewardship, leadership, and citizenship.

Maplewood Richmond Heights has led the way in developing innovative programming and learning surrounding the unique sustainability needs in an urban area. MRHMS has very limited green space, but still has provided a rich curriculum that integrates gardens, aquaponics, urban chickens, beehives, composting, and a rain garden. At the core of this work is a belief that sustainable schools and communities provide all members the greatest opportunities for success.

As a farm to school leader, MRHMS' cafe maintains partnerships with local farmers and universities, and uses products from the school's own gardens, backyard chickens, and honey bees. Every student at MRHMS is provided free breakfast. The school chef was designated a national School Nutrition Hero by the School Nutrition Association in Washington D.C. in 2015. Lunch features a salad bar and a daily vegetarian option. Spanish classes use the school garden to learn about and make Mexican cuisine, and the garden integrationist includes a trip to a local market in one unit.

The staff at MRHMS has deeply integrated their teaching and learning into this belief. MRHMS has embedded teaching sustainability and green practices deep into the curriculum in core content areas and exploratory classes. Through the use of units that revolve around books like *Seed Folks* or *Good Food Revolution*, teachers provide MRHMS students with opportunities to explore green initiatives while still honoring national and state standards for learning.

The eighth grade seed-saving unit has grown into a robust interdisciplinary experience. Art integration teaches technical botanical drawings. Communication arts classes research and write plant descriptions and growing information for the seed packets. Science classes test household radiation by taping seeds to cell phones and conducting germination tests. Math classes enumerate seeds produced by each plant, and have extrapolated seed production for future generations as an example of exponential growth and scientific notation. Social studies classes run a farmers market where seeds are sold as an economics lesson. The gifted program catalogues seeds, researches plant families, and starts a seed library.

Each student at MRHMS participates in physical education, with the aim that each student must be active doing moderate to intense activities during at least 50 percent of the class time. Physical education includes a variety of outdoor activities, including aquatics and a water safety unit in an outdoor pool, archery, skiing, and gardening as a lifetime fitness skill. In addition, students get outdoors during academic subjects as well; for example, students participate in a tree climbing program for physics and biology units, and a physics unit includes a visit to an ice skating rink to study Newton's Laws on a near frictionless environment.

Maplewood Richmond Heights derives its approach from the metaphor of school as expedition, taking students outside of the classroom over 15 percent of the school year. Student learning is taking place outside, in the community, or beyond the community. This approach to learning shifts the focus into the natural environment and promotes a connection with the community. For example, students study water quality and its relationship to macroinvertebrates starting in the local watershed in seventh grade and ending with a trip to Ocean Springs, Miss. and the Gulf of Mexico at the end of eighth grade. MRHMS also produced a video around biodiversity and salamanders in the Smoky Mountains that went viral.

The sustainability class is offered every semester, and serves as a multi-grade student leadership group to solve sustainability issues in the school. It has tackled initiatives around water runoff, energy conservation, composting, improving the

school's aquaponics system, and alternative transportation. A class called Cornerstone is offered twice each semester, and serves as a multi-grade student leadership class to look at issues around water quality, food shortage, and environmental factors that influence poverty and social injustice in the community and the world.

For each of the past four years, a team of students has participated in the USGBC—Missouri Gateway Chapter Green Schools Quest. During this process, the students collect baseline data in the area subject to improvement. In the past years, students have collected data on classroom energy use, green transportation, stormwater retention, and food systems. MRHMS placed second in 2016 and third in 2014. Students placed kilowatt monitors in classrooms and then provided specific feedback to individual teachers on usage with suggestions on how to improve. The school has registered a five percent energy use reduction in two years, and uses demonstration solar panels that generate roughly two percent of the school's energy needs.

To reduce waste, the school uses reusable flatware and compostable trays for takeaway and students employ one to one Chromebooks, leading to a 38 percent diversion rate. To conserve water, the school installed high efficiency hot water heaters, low-flow and automatic fixtures, and a water bottle filling station. Water from the aquaponics lab is used to water indoor plants, the garden uses a rain barrel and green roof, and outdoor commons use permeable surface materials to increase stormwater infiltration. The school implements an IPM plan and a no-idling policy, and uses only Green Seal certified cleaning products.

Expeditionary learning creates a space for students to begin to view the world through a lens of justice and fairness, and then explore the causation of the social, economic, and environmental justice issues that surround us every day.

Montana

Whitefish School District, Montana

Whole district approaches to sustainability in the heart of the Rocky Mountains

Whitefish School District consists of three school buildings that have a footprint of roughly 325,000 square feet and serve 1708 students. Whitefish is surrounded by the Whitefish, Stillwater, and Flathead Rivers, as well as the Whitefish, Salish-Kootenai, and Swan mountain ranges, and neighbors Glacier National Park. The district lies within a wildlife corridor that contains grizzly bears, elk, black bears, mountain lions, bald eagles, gray wolves, wolverines and big horn sheep, and within a watershed that includes 500 lakes and many native species. Environmental

stewardship and the conservation of nature are prominent values within the community, and drive the district's sustainability programming.

Over the course of the 2016-2017 school year, Whitefish has shared a new sustainability coordinator with the city. The coordinator worked with each school to develop an energy conservation plan based on a baseline energy audit, and worked with students and teachers to implement programming elements related to sustainability across the district. The district has prioritized energy efficiency in renovations and lighting upgrades throughout its facilities; received a mini grant from the Governor's SMART Schools program to purchase power strips; and is in the process of both applying for ENERGY STAR certification and developing an energy conservation plan.

The district will break ground on a two-story classroom building with attached greenhouse called the Center for Sustainability and Entrepreneurship (CES) in the spring of 2017. Using geothermal and solar production, the facility will become the first zero-net energy building in the state, and will serve as a laboratory for sustainable practices across the prekindergarten—12 educational continuum. Its grounds will include a production garden, an orchard, an experimental forest, and an outdoor classroom. Curriculum integration will connect learning to local agriculture, forestry, resources management, and entrepreneurship, and aspects of the facility are designed to help students achieve dual credit through partnerships with institutions of higher education.

The schools of Whitefish School District are within walking distance of each other. Each fall and spring, the district and the city sponsor walk- and bike-to-school events. New bike routes have been established and road signs placed to ensure student and staff safety. Transportation plans have been implemented at each school to provide effective parking options and reduce idling.

Whitefish has installed water bottle refilling stations, and plants drought-resistant native plantings to minimize irrigation use. The district has eliminated plastic utensils in the cafeterias, purchased metal silverware, and is transitioning away from the use of Styrofoam. At the middle school, the student council has purchased 30 sets of plates and metal silverware for each grade level kitchen to minimize the amount of waste generated during grade-level celebrations. Students and teachers have been educated about the systems that are in place at each of the schools to reduce waste.

A feature of the Whitefish School District's sustainability program is a high degree of coordination between facilities, curriculum, and food services. The directors of each department collaborate regularly to discuss how to improve sustainability at the district level. For instance, the district uses its student-maintained gardening space

to supply vegetables and herbs to the school district, using the garden for both educational and production purposes.

Whitefish has developed a comprehensive wellness plan, and was recognized through the Healthier US Schools Challenge. The district participates in a farm to school program, and purchases meat, dairy, grains, vegetables, and fruits from local farms. In addition, the high school's physical education and club programs offer activities such as fly fishing, rock climbing, challenge courses, and Nordic and alpine skiing. Students often go on field trips to Glacier National Park, as well as to rivers, lakes, and wooded trails.

Sustainability efforts are integrated through strong collaborations with multiple local, regional, and national organizations. Two important local partners, Whitefish Lake Institute and the Flathead Biological Field Station, organizations that work to maintain the health of the surrounding watershed, offer annual professional development sessions for teachers. Other important partnerships that promote sustainability in Whitefish School District are with the USGBC and the Green Schools National Network. Whitefish School District is part of the Center for Green Schools National Cohort, and participates in ongoing one-on-one coaching and small group workshops. Representatives from the district will present at the School Sustainability Leaders' Summit and the Green Schools Conference and Expo. Through a partnership with the Center for Green Schools, teachers in the district have access to a sustainability curriculum database called Learning Lab.

In addition to district level planning, each school has a sustainability plan and team that is led by students and teachers, which meets to develop building-specific objectives and benchmarks. Student leadership in the middle school and high school comes from the student council and the student environmental science club, called FREEFLOW. The middle school student council identified the issue of automobile idling that was occurring during student pick-up and drop-off times. The students researched the health and environmental issues surrounding idling, presented their findings to the school board, and enacted a no-idle zone around each of the schools. The student body voted on a mission, slogan, logo, and action they could embody to foster sustainability. Students play a primary role in the collection and processing of recycling at each school.

The district partners with U.S. Forest Service through a conservation grant to learn about ice science. Through hands-on learning at the community ice skating rink,

students learn about properties of water, Newton's second law of motion, and rotational motion. In another example of learning that connects students to nature, Whitefish Mountain Resort provides annual snow safety training, where students learn avalanche safety, ski and snowboard safety, boundaries, and dressing for cold weather. Students also conduct snow survey investigations in which they examine how the water cycle and climate change affect avalanches. As part of their fire ecology learning, students visit areas in Glacier National Park and Flathead National Forest that have been affected by fire to learn about forest regeneration.

During a yearly weeklong eighth-grade trip, students visit EPA superfund sites, where they see the effect of human activity on the environment. Students have conducted projects in collaboration with Algae Aquaculture, a local business that develops strategies to sequester carbon dioxide in algae to process it for energy and fertilizer. Another project partnered students with researchers in France seeking to test the friction of climbing chalk. Students have partnered with the University of Montana's Clean Air and Healthy Homes Program to explore how particulate matter varies according to different environmental and human-induced factors. In a study of the ski industry in Whitefish, students found that ski wax was a significant risk to an individual's respiratory health if exposed to it over an extended amount of time.

The entire seventh and eighth grade class performs community service during the final week of the school year. Projects include trash clean-up of City Beach; painting a school neighbor's picket fence; clean-up, trail maintenance, and invasive weed mitigation of Whitefish Trails; helping at a food bank; and clean-up of Whitefish property. Students engage in citizen science projects researching the health of the local watershed. Students also participate in the local farmers market to provide spring vegetable starts to the community. Students explore how hydroponics, aquaponics, soil composition, natural lighting, fluorescent lighting, and LED lighting affect plant growth and productivity. They conduct energy audits of their classroom, home, and school, and analyze water quality of local creeks, resulting in a long-term restoration project. By creating learning experiences that combine science research and ecological conservation, students are learning and developing essential skills related to sustainable citizenship.

The community of Whitefish is surrounded by amazing natural beauty, and Whitefish students are learning to prioritize conscious consumption, safeguard the environment, and serve the community. Whitefish School District is cultivating a sustainable citizenry that will guide the community in a manner that balances social, environmental, and economic needs for current and future generations. As students in the district learn, experience, and practice sustainability in a variety of contexts, they develop the knowledge, skills, and aptitude to become stewards for their community, state, nation, and planet.

Nebraska

Chandler View Elementary School, Omaha, Neb.

Learning conservation and stewardship firsthand

Chandler View Elementary School serves 700 students, 83 percent of whom qualify for free and reduced-price lunch, and 29 percent of whom are considered limited English proficient. Chandler View has implemented schoolwide programs as well as club and grade-level initiatives such as "Just take two, thank you" for paper towels and "1,2,3…That's enough for me" at the drinking fountains. Students manage the recycling efforts under titles such as Trash Auditor and Green Schools Manager. The office contributes by setting copy machines for two-sided printing, and ensuring that most communication arrives via email. Reuse paper trays are found in all classrooms, and a "Whoops" basket is located by copy machines. To conserve energy, end of day checklists are used in all classrooms. Compact fluorescent bulbs have replaced all incandescent bulbs, and computer labs shut down automatically each evening.

The Ecology Club plays a vital role in reducing the school's environmental footprint. These students manage the glass and plastic recycle bins, and encourage parents to sign up to help in this effort. The club partners with Fontenelle Forest to harvest seeds for the annual Green Apple Day of Service. They care for all flowerbeds, the vegetable garden, and have planted eight trees. Three blue birdhouses have been installed, and students have tracked some 20 bluebirds fledging in the past three years. The club also wrote letters to school-supply catalog companies requesting just one catalog, which would be available to all teachers. Chandler View has begun participating in the Keep America Beautiful Recycle-Bowl and America Recycles Day.

Chandler View's efforts are reflected in their metrics. From a baseline of July 2014, the July 2016 annual diversion rate increased from 49 percent to 52 percent, the second highest in the district, and more than double the district average of 24 percent, while emissions per occupant decreased 25 percent. During the same period, Chandler View's ENERGY STAR rating increased 25 points, while annual energy costs decreased by $25,000. Annual water use is 1,039 gallons per occupant, less than half of the district average use of 2,706 gallons per occupant.

Chandler View has an IPM and indoor air quality program in place. The school has an asthma management program consistent with the national asthma education and prevention program, as well as a chemical management program in place.

Chandler View's Wellness Committee sponsors a Wellness Night, and partners with School Based Health Center, Bellevue Junior Athletics Association, Nebraska Safety Council, Nebraska Extension, Live Well Nebraska Kids, and the South High School Wellness Club. Programs include aerobic exercise, healthy heart games, seatbelt and bike helmet safety, and resources for parents to aid in locating area health facilities. Additionally, all classrooms have monthly exercise goals. Fuel Up to Play 60 offers a 100 mile running club, in which the sixth grade competes. Other staffers host clubs highlighting wellness concepts. The nurse sponsored Cooking Matters, taught by the Visiting Nursing Association, and a student Wellness Club taught by Nebraska's Extension Service. The Fresh Fruits and Vegetables Program provides fresh snacks.

In physical education class, students use the Pacer, which records data on running, sit-ups, and push-ups for their entire grade school tenure. Presidential Fitness tests are administered, and participation is encouraged in Jump Rope and Hoops for Heart. The outdoor walking track challenges students to add their name to the Smile Mile Run Chart. Students use the Project Fit America station. Intramural teams are offered in football, volleyball, soccer, and basketball. The counseling department coordinates the schoolwide discipline program, through which Cougar Paws are earned for good behavior. A Student Assistance Team is in place, offering help to students and teachers. Other programs include Operation School Bell, Food-Bank of Midlands backpacks, connections for trauma-therapy, Boys & Girls Clubs, GOALS, and SAFE, all helping families and students focus on healthy lifestyles. A unique mentor/mentee program also is in place, where teachers who volunteer their time are paired with a student for an entire year, and engage in activities and out-of-school trips.

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Environmental education is integrated daily into the curriculum. All students study ecology and sustainability in science and social studies. Units on recycling and conservation activities, and science lab objectives provide awareness to prekindergarten through sixth grade students. Farmers come into the classroom to discuss what's happening on their farms, and to emphasize the need for care of our land. Students discuss ecosystems and the effects from human pollution, natural disasters, and altering animal environments. Population sustainability, crop care, and future production methods are discussed. Environmental changes from the effect of humans and animals in terms of economics and health are evaluated.

Kindergarteners study microhabitats and the interconnectedness of different living things. They also have a fall apple unit, and discover how trees provide shelter and food for animals and humans.

Special assemblies are held throughout the year that target environmental concepts. The music teacher creates Earth Day assemblies, and develops summer camp musicals focused on healthy concepts. The student Ecology Club is a major player in providing conceptual knowledge to the student body. The group has produced videos on planet care, effective recycling, and conserving resources. Students plant, harvest, and market crops. Students have worked with groups throughout Omaha to learn firsthand about the sustainability initiatives of others, including trips to MidWest Laboratories, Fontenelle Forest, Lauritzen Gardens, Council Bluffs Recycle Center, and Wenninghoff Truck Farm.

Omaha Northwest High Magnet School, Omaha, Neb.

Great leadership gains through partnerships and public presentations

Omaha Northwest is making great gains in environmental learning and conservation. Many students at Northwest are involved in sustainable service learning projects, working with college students, Omaha Green Tours, landscape architects, and master gardeners. By working with college students and local professionals, Northwest students learn 21st century skills and are exposed to many career paths in environmental studies.

The school partnered with University of Nebraska Omaha (UNO) Service Learning and its Environmental Sustainability class to engineer and build a rain garden to capture and filter storm water runoff to help solve the problem of Omaha's combined sewer systems. The rain garden acts as a habitat for declining species such as Monarch butterflies and bees. Native plants are used in the garden to reduce watering and permeable pavement is used to line the garden to allow water infiltration. Students tag Monarch butterflies and participate in the Monarch Watch program to monitor the migration patterns and population numbers of Monarchs. This project has enhanced the environmental and horticulture curriculum by incorporating all facets of STEAM, by allowing students to conduct presentations to the community, and by providing an opportunity for students to create something that helps their community and also serves as a teaching tool for many future Northwest generations.

The project won the Nebraska state title for the Samsung Solve for Tomorrow Contest, earning Northwest High School $20,000 worth of Samsung technology and

being featured on National Geographic's Next Generation Environmental Leaders. Northwest students presented the design at the Great Plains Low Impact Development Conference, while the Horticulture teacher and her UNO Service Learning partner published the Service Learning Rain Garden presentation at the International Symposium of New Issues in Teacher Education, sharing their findings about the effect the project had on student learning, conceptions about the environment, and student concepts of leadership.

Northwest Environmental students have made a how-to recycling video for their student body to reduce trash going into landfills. They partner with Keep Omaha Beautiful to clean and label storm drains so that trash does not get into the water. They assist with the Chytrid Fungus Citizen Science project, working in collaboration with the Henry Doorly Zoo, and will monitor amphibian populations for the presence of chytrid fungus.

Northwest students have built a community garden and aquaponics system that grows fresh produce for the community. Students learn about soil health, compost organic matter, and practice organic gardening and pest control. Students learn about their native plants, cultures, foods, and sustainable infrastructures. They research and plant seeds together from multiple cultures, and then harvest the produce for food.

The rain garden acts as a habitat for declining species such as Monarch butterflies and bees. Native plants are used in the garden to reduce watering and permeable pavement is used to line the garden to allow water infiltration.

Northwest students test water quality in the streams around Omaha by testing for nitrates and a common endocrine-disrupting pesticide called Atrazine. They collect, analyze, and then report their data to the UNO Toxicology Department which is working on publishing the data. Northwest students partner with UNO International students to learn about their native plants, cultures, foods, and sustainable infrastructures. They research and plant seeds together from multiple cultures and then harvest the produce for food.

Students have meaningful outdoor experiences at every grade level. The greenhouse is used in the freshman level physical science course to demonstrate energy transfer and the water cycles. The sophomore level biology course uses the gardens for ecology, biodiversity, and species interactions. The junior and senior level food courses use the gardens for herb, vegetables, and fruits. Shop courses make plant stands and shelves for plants. Chemistry courses test the pollutants collected in the rain garden. Environmental and horticulture classes grow the plants, design the gardens, and study the socioeconomic effect these gardens have on the

community. The drama class uses the greenhouse plants as stage props. Photography Career Center students take pictures of the wildlife and plants in the gardens. Art students designed the rain barrel that collects water from the roof of the greenhouse, and the pottery students make the horticulture students clay pots to grow their plants in. Horticulture students sell the plants at a local craft fair to raise money for the greenhouse and gardens to buy more supplies.

Northwest has a green team that meets once a month to ensure that the school is making strides in its resource conservation, and continues to track its resource use in ENERGY STAR Portfolio Manager. The school community checks to make sure all lights, monitors, and electronics are turned off at the end of the day, and ensures that faucets remain leak-free. It participates in the Nebraska Green Schools program to explore other projects to reduce the school's environmental impact.

Northwest High School has a health and wellness team and a Student Health Center that provides care to at-risk students. The health and wellness team promotes healthy eating and an active lifestyle by motivating staff to participate in lunch-walks, soup lunches, and weight-loss goals. Students take part in a Healthy Huskies group that meets twice a month to make healthy foods and promote active lifestyles.

New Hampshire

Keene State College, Keene, N.H.

Cultivating stewards of place

The Keene State College story traces a strong, and deepening, commitment to environmental stewardship, sustainability, and health and wellness in all phases of campus life and the community. Through the years, the school's initial green efforts – well-intentioned, but less than systemic – have evolved into a comprehensive vision with strong buy-in from school leadership, faculty, and students.

In 2014-2015, using an inclusive civic engagement process endorsed and encouraged by college leadership, Keene State began assembling a framework to address every aspect of sustainability.

The college's mission statement articulates core values of environmental stewardship, sustainability, social justice, and equity. The strategic plan promotes student wellness and fosters a green culture through sustainability policies and practices that improve quality of life locally and globally. The campus master plan emphasizes improved natural resource management, energy efficiency, and high performance buildings. Related collegewide learning outcomes target civic

engagement and well-being, and the school's academic and co-curricular plan identifies approaches to achieve the learning outcomes.

Efforts include vigorously improving energy management, stepping up efficiency measures, implementing more rigorous performance standards for new buildings, and exploring low-carbon and carbon-free ways to heat the campus. Keene State has conducted a baseline greenhouse gas inventory using the Clean Air/Cool Planet's Campus Carbon Calculator, and a baseline performance evaluation using the AASHE STARS assessment yielded a Silver rating.

Ongoing outreach efforts help to boost awareness in the broader community. For instance, the Office of Sustainability and the President's Council for a Sustainable Future recently launched the Green Keene initiative, for campuswide engagement and action on sustainability. The fall issue of the alumni magazine focused on sustainability, with an overview of current efforts. A recent video address by the college president underscored the school's sustainability priorities.

The school's TDS Center, a LEED Platinum educational building, was purpose-built to support STEM education. Another point of pride is the Ecovation Hub Education Research and Training Consortium, which is a collaborative effort to develop a regional higher education center for green building and community development that fosters sustainability and resilience.

Key accomplishments from academic year 2015-2016 to the present day include the school's innovative, first-in-the-nation initiative to replace polluting heating oil with a carbon neutral, renewable biofuel made from 100 percent purified recycled vegetable oils. The replacement biofuel currently comprises 36 percent of the school's annual use. The college's food waste education and composting programs support 30 percent diversion of waste with an award-winning EPA Food Recovery Challenge effort.

In other examples of its integrative approach, Keene State emphasizes organic landscaping using compost made from dining hall kitchen waste, to protect the local watershed, promote healthy ecosystems, and ensure that school grounds that are safe and chemical-free. Such efforts also engage students in hands-on projects and research, including conducting food waste audits to determine additional green opportunities, or participating in the school's award-winning biodiesel research project.

Another highlight is the college's new, state-of-the-art, high-performance building: a new residential living and learning center designed to comply with the Architecture 2030 standard of carbon-neutral/fossil free buildings by 2030. The school

community also has established a socially and environmentally responsible investment option for the KSC Endowment Association.

The school's Center for Health and Wellness, counseling center, human resources, recreational sports, and dining services coordinate on-campus health efforts; additional partners include the Office of Sustainability, the physical plant, and academic affairs. Health promotion programs for students and staff, a FitBit Fanatics Loan Program, the KSC Moves Walking Program, Lunch & Learn Wellness Programming, one-on-one nutrition consultations, fee support for fitness center membership, wellness clinics – as well as counseling, psychological, and social services – all combine to promote the well-being of students, staff and faculty. Other community health initiatives range from a host of outdoor clubs and fitness programs, to a commitment to local and fair-traded food from over 80 farms and suppliers in New Hampshire, Vermont, Maine, and Massachusetts, which increase the sustainable and healthy food options in the dining facilities. Keene State is also an organizational champion in the innovative community wellness initiative, Healthy Monadnock 2020.

Academically, the school offers a liberal arts education that helps students to communicate effectively, identify connections between different branches of knowledge, and develop the wisdom to make a difference.

The Keene State model recognizes that students – and the workers, innovators, leaders and problem-solvers they will become – must employ critical thinking, creative inquiry, and intercultural competence in facing today's unprecedented challenges and opportunities. To develop solutions, they need strong interdisciplinary skills. This is especially true for environmental and sustainability education, which goes far beyond such familiar topics as energy efficiency, renewable fuels, and green buildings. In response, environmental and sustainability education at Keene State is not viewed as a narrow discipline, but engages the whole curriculum, so students gain insights from the arts, humanities, health, and social sciences, in addition to the natural sciences.

Keene State's commitment to interdisciplinary approaches is reflected in its Integrative Studies Program. Every student is required to complete 40 credits within Integrative Studies, including a required course in quantitative literacy, one to three courses in natural and social sciences, and one class designated as interdisciplinary.

In addition to the Integrative Studies Program, Keene State offers four majors (environmental studies, geography, sustainable product design and innovation, and safety and occupational health applied sciences) that explore key relationships

between environmental, energy, and human systems. Beyond these majors, some 35 percent of all academic classes address environmental or sustainability topics.

The Putnam Science Center houses biology, chemistry, physics, geology, and geography – as well as a rooftop greenhouse. The school's TDS Center, a LEED Platinum educational building, was purpose-built to support STEM education. Another point of pride is the Ecovation Hub Education Research and Training Consortium, which is a collaborative effort to develop a regional higher education center for green building and community development that fosters sustainability and resilience.

The college's location in the Monadnock Region, Ashuelot River watershed, and city of Keene offer abundant hands-on, field-based opportunities for learning STEM content, knowledge, and thinking skills through addressing real world issues. Community engagement efforts range from river cleanups, litter pickups, and landscape maintenance, as well as painting, cleaning, and other projects across town, to New Student Community Service Day, a team-building service opportunity for entering freshmen during orientation. In fact, Keene State College places a high value on cultivating civic knowledge, skills, and action through academic programs, community service, campus clubs, and participation in the American Democracy Project. As a result of its focus on civic engagement, Keene State is one of 240 colleges and universities awarded the prestigious Carnegie Community Engagement Classification. The goal of the American Democracy Project is to produce graduates who are committed to being active, involved citizens in their communities.

New Jersey

George L. Catrambone Elementary School, Long Branch, N.J.

Driving a green wave of change

The George L. Catrambone Elementary School was constructed in 2014 in a district whose logo and mascot are the Green Wave, and whose board adopted environmental stewardship as part of its mission. Living up to this image, the school's teaching and learning incorporate the environment in all thoughts and actions on behalf of its 846 students, 90 percent of whom are eligible for free and reduced-price lunch and 72 percent of whom are minority. LEED for Schools was used as a reference for the design of the new building, and native plants were selected for its landscaping. Catrambone tracks an ENERGY STAR Portfolio Manager score of 79, and received certification in 2016.

The Power Save Team, a group of second- and fourth-grade students, teams up with New Jersey Natural Gas and the Alliance to Save Energy to reduce the school's energy consumption. They conduct energy audits in all classrooms, and educate building occupants on how to reduce energy by monitoring lighting, temperatures, appliance power usage, windows, and doors. Simple behavioral changes like shutting lights off when leaving a classroom have made a difference already. The school has achieved 11 percent utility cost, 14 percent greenhouse gas, and 40 percent energy savings in a single year. In addition, 86 percent of students ride the bus to school. Of the 14 percent of students that do not ride the bus daily, 41 percent of them travel to school in carpools.

The students and staff in every classroom are challenged to reduce their environmental impact. In the Catrambone courtyard, students constructed a greenhouse from more than 2,000 recycled soda bottles that they collected. With the growing season extended, students grow enough vegetables and herbs from their gardens to feed students, staff, and the greater community. The courtyard serves as an outdoor classroom, and includes rain barrels to water the gardens, reducing irrigation needs. Bioswales on campus help to reduce stormwater runoff.

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In a continued effort to reduce waste, single use water bottles have been eliminated in the building, and a student fundraiser sold reusable water bottles, which raised enough money to purchase new bottle filling stations. In the lunchroom, reusable trays help reduce waste, and a garbage audit made students more knowledgeable about recycling and more cognizant when separating trash. Third grade students studied the negative effect straws have on New Jersey's sandy shores, and, as a result, stopped using straws, encouraging the entire school to follow their lead. Second graders collect used aluminum juice pouches to clean and repurpose into bags, wallets, and lunch boxes. All of this has helped contribute to a 40 percent recycling rate.

Catrambone students are making healthier choices thanks to a farm to school program and healthy fruit and vegetable snack grants. Students have 160 minutes of physical activity per week, and staff participate in biweekly workouts after school to help everyone dance their way to a healthier lifestyle. The school recently earned a bronze level certification from the Sustainable Jersey Schools program and for the Alliance for a Healthier Generation in 2016. Catrambone has a green cleaning program in place, is certified asthma-friendly, and is home to an on-campus health center.

Reading, science, and social studies curricula are tied to content knowledge in sustainability and the environment. Students participate in units about endangered species, energy conservation, and recycling. Third graders participate in a language arts unit about green schools and fifth grade students research the benefits and disadvantages of different energy sources. Approximately 150 fourth and fifth grade students are bussed to the middle school daily to extend their school day by three hours, during which they are immersed in a variety of STEAM, art, health, and nutrition related courses of their choice. Kindergarten through third grade students may choose to extend their day twice each week for three hours by staying after for a STEAM, reading, coding, theater, or tutoring program that features sustainability education.

Long Branch Middle School, Long Branch, N.J.

Iron Chefs creating sustainable biospheres

Ten years ago, Long Branch Middle School opened its doors with environmental impact at the forefront of its design, including geothermal heating and solar panels. The solar panels generate a whopping 43 percent of the school's energy needs. Long Branch collects 300 megawatt hours from the solar system yearly, reducing the energy strain on the community. Long Branch has a score of 84 in Portfolio Manager, 21 points higher than four years ago, and has a 49 percent recycling rate.

The Power School Team has taken on the challenge of tracking energy usage with the help of a program by New Jersey Natural Gas. Team members audit all energy use and educate building occupants on how to reduce energy by monitoring lighting levels, temperatures, appliance power usage, window and door usage, and even simply shutting lights off when leaving a classroom. The school's sustainability efforts have saved over $2,000,000. Long Branch has earned bronze level certification from the Sustainable Jersey for Schools program.

Long Branch curriculum embeds environmental sustainability across all grade bands and subject areas. Students take learning out of the classroom in multiple field trips throughout the year to zoos, museums, the beach, and local watersheds. Students create and design farming equipment using Little Bit Circuits and a sustainable green habitat to survive on another planet. Students debate and write position-based essays on topics such as plastics in cosmetics, endangered species regulations, genetically modified crops, and depletion of natural resources. They create their own solar cookers to harness the power of the sun to cook food or make water safe to drink. Long Branch students have created a sustainable biosphere in a recycled soda bottle with native plants from Lake Takanassee, the local lake on the southern board of the Long Branch community.

Weather events such as Hurricane Sandy are studied to understand how the school community was affected. The school was used by the National Guard as a staging area in the aftermath of the hurricane. The school partners with the Sea Grant organization at Sandy Hook to have students study the environmental impact of sea grass on the dunes. At the end of the school year, students go to Sandy Hook to plant sea grass to replenish the grass, which is affected by storms.

Special education students grow and harvest herbs and vegetables in their courtyard garden to cook, and sell healthy meals to staff members at Café 63, a student-run Café that produces an annual healthy cookbook to sell in June. Long Beach is eating right and making healthier choices with a farm to school program and healthy fruit and vegetable snack options in the lunchroom. Students compete once a year in an Iron Chef challenge sponsored by food service provider Sodexo in which students create their own healthy food plates from a list of given ingredients. Local community members judge and taste the teams' healthy creations to crown one team the Iron Chefs of Long Branch Middle School. Long Beach attained the Bronze Level for the Alliance for a Healthier Generation in 2016.

The school's comprehensive health and physical education curriculum focuses on preparing the 1,115 students, 70 percent of whom are eligible for free and reduced-price lunch and 76 percent of whom are minority, to lead an active and productive lifestyle. Over 95 percent of students walk or bike to school.

New Mexico

Sandia Vista Elementary School, Rio Rancho, N.M.

LEED Silver where students know to do the right thing

Sandia Vista Elementary School, of the Rio Rancho Public School (RRPS) district in the windy high desert of New Mexico, actively has been employing parallel,

concurrent strategies to reduce its environmental impact, while involving its students in the process. The Montessori-influenced public school serves 631 students, 63 percent of whom are minority, in a LEED Silver certified building.

Sandia Vista consistently participates the district initiatives called Do the Light Thing and EnerG3. It was also one of three pilot sites statewide for the Public Service Company of New Mexico's HomeWorks program, which now is being offered to all fifth graders in Santa Fe, Albuquerque, and Rio Rancho public schools. As a result of this pilot, 100 percent of Sandia Vista fifth graders received a HomeWorks kit to use in their residence, with the assistance of their teachers and families. The kit includes energy and water conservation tools including lightbulbs, a shower timer, an LED nightlight, a faucet aerator, and a low-flow showerhead. The school has reduced its energy use by 25 percent over five years, and has a Portfolio Manager score of 97.

Sandia Vista's art program and media center participate in a districtwide recycling exhibit contest. The school has upcycling, precycling, composting, and standard recycling programs, leading to a 43 percent recycling rate. The school oversees a unique food recovery program that repackages unused food for needy families. It also was one of three pilot locations for the district's Safe Routes to School program. Sandia Vista uses 100 percent Green Seal certified cleaning products.

A schoolwide campaign called Don't Slack With Your Snack! encourages families to provide protein and vegetable based snacks instead of the typical sugar-filled juices and snack bars. A running club is offered four days a week, and dance parties are the highlight of Friday afternoons. The school nurse and physical education teacher coordinate a monthly Walk & Roll from a designated park, a half-mile from the school entrance. Students are incentivized with morning announcements, breakfasts, special costume events, and decorations for scooters, bicycles, and students themselves. The SVES SAFE Program, which serves students before and after school, provides life skills instruction, daily recreation with inside and outside games, nutritional information, educational environmental field study trips (often walking), guest speakers from local health agencies, Jazzercise, Zumba, Tai Chi,

and interactive movement experiences. "The Just Be It! Healthy & Fit" curriculum is used, promoting healthy youth and family lifestyles. Presentations have students wash with glogerm on their hands and then place them under a black light to show students how to properly and thoroughly wash their hands.

A club that epitomizes the environmental ethic of the school is the SaVE (Sandia Vista Elementary) Earth Squad. The Squad was founded by several teachers and educational assistants and averages 25 students. Meeting topics rotate through recycling, upcycling, food reclamation, energy conservation, campus cleanup, and gardening. The school features a community xeriscape garden and greenhouse. Every grade maintains raised beds.

Sandia Vista has taken advantage of several 4-H Youth Development curricula, including Egg to Chick (providing eggs and incubators) for fifth graders, which includes four visits from the local 4-H agent; Just Be It!, which focuses on preventing childhood obesity and diabetes by teaching healthy eating habits, exercise, and hands-on culinary experiences; and Kids, Kows, & More, which introduces students to the means of their food production and agricultural products (cotton, honey from bees, wool). Disaster preparedness is another popular unit, in which each student creates a kit including a flashlight, Band-Aids, water, wipes, and information. The school employs NEED, Project Learning Tree, Project WET, and Keep Rio Rancho Beautiful professional development. Students engage in local walking field trips, spend time in their authentic arroyo classroom, and participate in the River Xchange program to explore major water resources topics over many months as part of the curriculum.

Ohio

Lakewood Catholic Academy, Lakewood, Ohio

Saintly stewards of the environment serve a Great Lake

Lakewood Catholic Academy (LCA) was founded in 2005, and serves students in preschool through eighth grade. The school is a member of the Cleveland Catholic Diocese, and located on nine acres of Lake Erie shoreline property, allowing students and teachers to take full advantage of the ecosystem of the Great Lake. It also neighbors Lakewood Park, a 31-acre park in the city. The park features a walking trail used by the physical education students and by the fifth grade students during their water walk, an environmental advocacy and fundraising project.

The school replaced an old boiler with two energy efficient boilers, and all of the fluorescent light fixtures in the school with LED fixtures, many of which are motion-

sensored. LCA renovated three restrooms over the past five years, installing low-flow filters.

Working with Lakewood Refuse and Recycle inspired students to begin a recycling program at LCA, and the school was the first in the city to participate in the curbside recycling program. The recycling program has grown over the years, and the students are committed to reducing waste whenever possible, including hosting waste-free lunch days in the dining hall. Overall, the Saintly Stewards have reduced garbage schoolwide by 20 percent.

A partnership with Drink Local/Drink Tap teaches the students the importance of clean drinking water, which inspired them to host a fundraising walk to raise money for wells in Uganda, as well as participate in local initiatives that promote the use of tap water over bottled water. The school used a grant from the Ohio Department of Education and the Ohio Facilities Construction Commission for the sampling, testing, and replacement of drinking fountains, water coolers, and plumbing fixtures that may have elevated levels of lead.

Through many partnerships, the school is reducing its carbon footprint while educating students on how to be environmental stewards. Its partnership with the Cleveland Metroparks allows students to learn more about Monarch butterfly migration, Monarch waystations, and native plants that are butterfly food sources. The school was chosen by the Cleveland Metroparks as the recipient of an educational grant to build a Monarch waystation on the northern edge of the property.

The school contracts with Lago Dining Services to provide a fresh salad bar and fresh fruit bar every day. LCA no longer fries any food, and all food is freshly made from scratch each day using a majority of organic, non-genetically modified ingredients. Students in kindergarten through fourth grade engage in school-supervised physical education and outdoor time for six and a half hours per week, and students in grades five through eight for three hours per week. Students also use an outdoor classroom and play on the school's 43 different sports teams.

Fifth and sixth graders use the adjacent park to conduct soil temperature tests. Many LCA teachers also take advantage of the newly completed Solstice Steps. These steps face the lake, and were designed around the summer solstice. In technology class, students participate in a unit where they learn skills needed to complete a long-term project to create environmentally friendly businesses. The students research various eco-friendly corporations and then use the information to create their own businesses. In seventh grade science class, students study global water systems, researching the effect of plastic pollution and its relationship to surface currents. They then use their data and information to create a newsletter to get the word out and to explain how plastic waste has accumulated to form the Great Pacific Garbage Patch, a giant landfill in the central North Pacific. Fourth grade students use STEM knowledge and problem-solving skills to learn about solar energy and create and race solar-powered cars.

Oregon

Portland Waldorf School, Milwaukie, Ore.

A LivingLAB for holistic, personalized, experiential learning

The Portland Waldorf School (PWS) is an alternative private school in Milwaukie, Oregon that serves early childhood through high school students. PWS provides a holistic education based on age-appropriate teaching practices that recognize students as individuals on a unique learning journey, academically, socially, and emotionally. PWS's environmental education program assures that sustainability projects are woven into both the curriculum and extracurricular activities for all ages.

Two years ago, the PWS community committed to funding and staffing an innovative environmental education program called the LivingLAB. More than just a garden program, the LivingLAB actively engages the students with a wide variety of sustainability-related projects that are integrated into a long-term site design that is being implemented by students in conjunction with their academic subjects. The school's intentional work with harvesting the natural water flow on campus, remediating runoff water from its parking lots, promoting biking and public transit, recycling, gardening, composting, and encouraging best practices around reducing waste produced and energy use, including changing all lightbulbs to LED, qualified the school as an Oregon Green School in 2016.

Daily food compost chores, tending to gardens with various themes -- including dye plants, food forests, wetland plants, native plants, medicinals, pollinator-attractants, and edible landscaping -- and regular use of a wood-fired oven for a variety of subject lessons engage students directly with ongoing activities that model regenerative practices and develop healthy habits. Nutritious cooking activities are

integrated into classes for all ages. Students constructed gravity-powered water pumps to irrigate gardens, a bike shelter, and a rainwater catchment system that flows into the early learning play, so that even the youngest members of the school community can interact in a hands-on way with this resource-efficient technology. Water bottle filling stations, bioswales, and xeriscaping are employed to reduce environmental impact. Students pack waste-free lunches, bring reusable dishware from home, compost, and recycle. The school encourages handmade crafting using natural materials and products, which are available through the school store.

The natural features in the school's neighborhood and bioregion receive regular attention, as students volunteer with the local watersheds doing native habitat restoration. PWS recently was recognized for this work by the Johnson Creek Watershed. Classes regularly volunteer with charitable organizations such as Habitat for Humanity, the Re-Building Center (which oversees resale of used construction materials), Annie Ross House (an emergency shelter), St. Francis dining hall (which feeds the homeless), and the Oregon food bank. Ninth grade students spend a week volunteering at local, organic farms in Oregon. Bridging international with local efforts, one teacher involves her class with her work as a cultural navigator through the Catholic Charities refugee resettlement program, and the LivingLAB director actively forges relationships with leaders of international sustainability nonprofits in order to integrate lessons from global efforts with the school curriculum.

The PWS math, science, and engineering curricula help students develop ethics-based critical thinking skills before they engage directly with technology, so that they can do so responsibly and with a direct understanding of how human systems can support natural systems. Biomimicry, permaculture, and biodynamics provide important frameworks for students to understand topics such as appropriate technology, science, and nutrition with greater complexity. The LivingLAB provides opportunities for kinesthetic learners to engage directly through activities that demonstrate the concepts they are learning about in classes. Middle school students conduct a waste audit each year, and draw the community's attention to the types of food packaging that they find in most abundance in the trash cans.

Portland lacks the racial diversity of many other metropolitan areas in the U.S., so PWS consciously and actively seeks ways to continue to be equitable and accessible to all. Though the school generously offers scholarships for low-income families, PWS recognizes that accessibility does not only involve finances. The school runs diversity trainings for the faculty and staff at the school to further its vision of an inclusive environment, and the school has established a successful foreign exchange program in the high school, staffed with faculty that support both the academic and social success of these English as a Second Language students. Care groups meet regularly to discuss students with special needs and circumstances, and all subject teachers, therapists, and specialists are involved with guiding each student toward success. In this type of respectful learning environment, each student can realize fully his or her potential.

Pennsylvania

Coebourn Elementary School, Brookhaven, Penn.

Learning about LEED

Coebourn Elementary is a new construction in the Penn-Delco School District that opened in January 2015. During construction of the Coebourn Elementary, the district opted for a hybrid geothermal HVAC system, replaced several dual-fuel large boilers with high efficiency gas fired boilers and domestic hot water heaters, and installed heat wheels and reheat systems. Coebourn uses low-flow fixtures throughout the school. There is no irrigation system onsite; grass is watered by rain only. The site includes rain gardens and stormwater inlets. Coebourn has implemented and maintains a single stream recycling program with Waste Management as its partner. The fifth grade Compost Club has set a goal to create enough compost to fertilize the school's new garden.

Coebourn's science curriculum includes a deep understanding and connections to life, physical, and earth sciences. Scientific explorations allow students to create a hypothesis and physically examine and test variables, as when students tested several types of fabrics to see which would best keep them dry in the rain.

Coebourn's green committee established monthly green or healthy activities to bring awareness to the school community. The committee provides monthly instructional resources that go along with the monthly theme. Themes have included: healthy snacks; a plastic toy drive; reusable bottles; water consumption only; Jump Rope for Heart day; reusable lunch bags; Earth Day activities: outdoor classroom learning; Field Day; and creation of garden tiles and birdhouses, in partnership with Lowe's Hardware. Physical

education at Coebourn Elementary is frequently outside, and students participate in two recess sessions per day.

No-idling policies and IPM are strictly enforced.

Coebourn's science curriculum includes a deep understanding and connections to life, physical, and earth sciences. The weather unit encompasses learning the details of different types of weather; and how to measure and identify weather by using tools such as thermometers, rain gauges, and wind socks. Scientific explorations allow students to create a hypothesis and physically examine and test variables, as when students tested several types of fabrics to see which would best keep them dry in the rain. In the living organisms unit, students create terrariums and aquariums to learn about how plants and animals depend on one another. Each habitat is unique to the characteristics of the organisms and what they need to survive. They make connections between humans, animals, and plants, focusing on their individual needs. Fourth graders learn about electricity, as well as renewable and nonrenewable resources. In a course called Microworlds, students explore magnifiers, including the hand lens and microscope. In Ecosystems, students set up a terrarium for living organisms such as crickets, isopods, mustard, grass seed and alfalfa. Duckweed, elodea, algae, fish, and snails are introduced in the aquarium. The students connect the two habitats to create an "ecocolumn."

The curriculum includes sustainability education through classroom lessons, schoolwide announcements, professional development at faculty meetings, and student-led presentations and lessons. In addition, the school facility is a teaching tool to learn about geothermal, electrical systems, and LEED certification, in lessons led by the district's facilities director.

The School District of Philadelphia, Pennsylvania

Green futures for all of Philly

The School District of Philadelphia is a large historic urban public school system in Pennsylvania with 143,387 students, 78 percent of whom qualify for free and reduced-price lunch, over 300 buildings, and 25 million square feet of building space. The average school building's age is 70 years. The student population is diverse: 51 percent of students are African American, and 20 percent are Latino. Among them, they speak 24 languages. The school district aims to make every Philadelphia public school a green school by 2020, and the superintendent committed to this in May of 2016 when the district launched its first five-year sustainability plan, called GreenFutures. The plan aims to reduce energy

consumption districtwide, increase waste diversion from landfills, increase school green spaces, and create healthy indoor environments and healthy living habits. The district is a charter member of the Green Schools Alliance District Collaborative, and home to 19 registered National Wildlife Federation EcoSchools and a 2013 U.S. Department of Education Green Ribbon School.

LEED certifications have been obtained for eight district schools. In 2011, the School District of Philadelphia received the USGBC's Center for Green Schools' Best of Green Schools Award for committing to all new schools being certified LEED Silver, and rolling out a plan to address the City of Philadelphia's existing schools. The district currently tracks its energy use through EnergyCAP and ENERGY STAR Portfolio Manager, and has registered a 40 percent reduction in energy use over five years. The district has contracted an energy services company to offer behavioral change recommendations, energy audits, and energy education.

The School District of Philadelphia has implemented a comprehensive recycling program at 42 schools, and plans to implement full recycling programs at every school within five years. The first pilot of schools with comprehensive recycling programs is showing significant progress in waste diversion, with a 30 percent diversion rate being measured at some schools. One school has implemented a successful model composting program that serves the Philadelphia community in addition to its own school community.

Over the past five years, Philadelphia has constructed large green stormwater infrastructure projects at 31 schools, including surface and subsurface infiltration basins, porous pavements, rain gardens, storage trenches, bioretention swales, green roofs, and porous play surfaces. The district has committed to constructing a minimum of five major green stormwater infrastructure projects per year in the district's sustainability plan, helping to manage stormwater runoff and provide educational opportunities and enhanced recreational amenities for students and the surrounding community. The district receives stormwater financial credits that reduce its utility costs for water supplied to schools.

To encourage healthy student hydration, during the summer of 2016, new bottle filling stations were announced as a standard for all Philadelphia public schools. The district invested $1,000,000 to install a minimum of three hydration stations for

every school. These are filtered for lead, chilled, and have a bottle filling counter to illustrate to students how many water bottles are saved from landfills by using the stations.

In 2011, the district was awarded the EPA's Indoor Air Quality Great Start Award for establishing an indoor environmental quality program that was based upon the EPA's Tools for Schools program. The district uses certified Green Seal cleaning products, with a $2,000,000 budget for its green cleaning program.

The school district serves 92,500 free lunches and 57,500 free breakfasts daily, including nutritious foods, with a focus on healthy hydration, farm to table, and fruit and vegetable of the month programs. In fiscal 2016, the district invested $102,000 in commercial blenders to develop a fresh fruit smoothie program, and, invested $34,949 in increased spending on chicken products that are certified to have responsible antibiotic use. One of Philadelphia's most successful healthy living initiatives is EAT RIGHT NOW, which provides free nutrition outreach programs and services to all public school students, teachers, staff, administrators, and parents. EAT RIGHT NOW is based at both school and community sites, during school hours as well as after school, and involves nutrition education at various levels.

Sustainability-infused curriculum, professional development opportunities for teachers and operations staff, and the intentional shift in organizational culture toward sustainability is a priority for the School District of Philadelphia. Through the GreenFutures sustainability plan, monthly Education for Sustainability meetings take place with a committee of district curriculum specialists and environmental staff, as well as external partners. So far, the *Understanding the Urban Watershed Curriculum Guide* has been added to the core curriculum, thanks to a partnership between the Fairmount Water Works, Philadelphia Waters educational branch, and the district's curriculum office. Since 2015, five professional development workshops have been provided to teachers by partners from the National Wildlife Federation's Eco-Schools USA, The Philadelphia Zoo, The Franklin Institute, Keep Philadelphia Beautiful, and The Cloud Institute. Also, Asthma 101 training is being provided to teachers through the district's Asthma Management Program, in partnership with the American Lung Association. Each of the sustainability professional development opportunities provided for teachers include credits that may be used to maintain teacher licenses in Pennsylvania.

Environmental science concepts are woven throughout the science curriculum from kindergarten through eighth grade. The units are sequenced to build concepts and skills toward taking high school level environmental science courses that cover topics including the basic chemistry of our planet, biogeochemical cycles, ecosystem dynamics, evolution and biodiversity, and human populations.

The Penn Alexander School infuses environmental responsibility and sustainable practices into many of its lesson plans, with students able to demonstrate their knowledge and understanding of the course content through the application of real world situations. The Baldi Middle School environmental science program is based on student-centered ecological investigation, which leads to monitoring of local watersheds, habitats, vegetation, wildlife, wetlands, and marine coastal environments. Sayre High School integrates principles of sustainability into teaching and learning by incorporating the Education for Sustainability model framework into the all-female maker's and aquaponics programs. Lincoln High School's Environmental Technology Academy is dedicated to educating students to be stewards of the planet, and to preparing students to be ambassadors for the environment, by building upon relevant experiences in conservation of built and natural environments. W. B. Saul High School of Agricultural Sciences is situated on a 130-acre campus and features amenities such as a nursery with greenhouses, small animal laboratories, an arboretum, and a working farm that houses poultry, dairy, swine, sheep, horses, a meat science program, field crops, and a pasture area for the livestock. Students from Saul High School are mentoring Fox Chase Elementary School to become a completely agriculturally based elementary school. The elementary school also is partnering with the Fox Chase Farm, a Philadelphia School District demonstration farm, to assist in integrating the agricultural curriculum into the classrooms and provide farm visits.

The many partnerships that Philadelphia has acquired through the development of its sustainability plan are the reason why the plan exists and continues to grow. Through monthly committee meetings for Education for Sustainability, consumption and waste, energy and efficiencies, school greenscapes, and health and wellness, Philadelphia not only is receiving guidance and expertise from partnerships, but also gardening workshops, school recycling outreach and support, composting cooperatives, and even funding for projects such as creating an mini-recycling facility, used to demonstrate how materials are sorted during recycling.

The School District of Philadelphia, as a community, from superintendent to chief operating office, to school principals and facilities staffs, understands that green and healthy schools are where children learn best.

Rhode Island

Moses Brown School, Providence, R.I.

Stewardship, simplicity, and sustainability at a Quaker school

Moses Brown has been working hard in recent years to reduce its environmental impact and advance its sustainability goals. At the center of this effort has been an all-school sustainability committee, which works throughout the year to advance the school's sustainability mission and goals, and is composed of faculty, staff, administrators, students, and parents. It includes teachers from all divisions, as well as the school's business manager, head of operations, director of dining services, dean of students, academic dean, associate director of athletics; and head of school. In 2016, the upper school student environmental club was reconstituted as the Environmental Council, with greater responsibility and a more formal leadership structure. The student leaders of this council attend the monthly meetings of the sustainability committee. The sustainability committee offers mini-grants out of its budget to students or teachers with ideas for advancing the school's environmental goals.

Moses Brown recently installed a new boiler plant and solar panels. Ninety percent of the facility has motion-sensor lights, and the field house has been retrofitted with LED lighting. The majority of roof surfaces on campus boast PVC roofing membranes, the high solar reflectivity of which reduces energy waste and lowers monthly heating and cooling costs. Solar shades that track the sun's trajectory adjust to reduce cooling loads. Rain barrels are placed at strategic high-flow areas on campus; every downspout on campus is channeled into a retention system of five tanks, and three bioswale systems help to make efficient use of land and water.

Moses Brown has a full-time psychologist who provides mental health counseling and support for students, as well as consultation to teachers and families about social, emotional, and behavioral issues.

All health services have been consolidated into a wellness department, chaired by a physical education teacher, which includes the school nurse, school psychologist, and athletic trainer. Students participate in a wide offering of sports, or fulfill a fitness requirement in other ways. Together with the athletic department, the wellness department has programmed recreational athletic opportunities for school employees, and also promoted fitness challenges. Faculty and staff are invited to mindfulness and meditation sessions, yoga classes, and running groups. Moses Brown has a full-time psychologist who provides mental health counseling and support for students, as well as consultation to teachers and families about social, emotional, and behavioral issues. All students in the eighth grade participate in a semester-long Personal Ethics and Resilience class aimed at building emotional awareness and coping skills.

The school partners with SAGE Dining to offer nutritious and healthy scratch-cooked meals. It sources much of the food locally in Rhode Island and Massachusetts, as

well as from the school's own garden. In addition, the cafeteria has been the site of some of the school's most innovating environmental partnerships. For example, for several years the school has been partnering with Newport Biodiesel, which collects all of Moses Brown's used cooking oil. In addition, Moses Brown was one of the first schools to partner with the Compost Plant, a company that collects and then composts all of the school's preconsumer food waste.

Environmental education is woven throughout the curriculum. For example, first graders take part in a farm-to-table unit where they learn about the path of food from seeds to what they eat every day. They partner with the upper school AP Environmental Science class to grow and eventually harvest various vegetables in the school garden. Fifth graders study climate change and the carbon footprint. They write letters to the Moses Brown head of school and head of operations detailing changes that they would like to see on campus in order to reduce the school's carbon footprint. In eighth grade history class, the culminating unit focuses on climate change and the international community's response. Seventh graders study water resources and learn about the lack of clean drinking water in much of the world. Environmental topics are woven through many upper school classes (e.g., by studying Thoreau's *Walden* and in junior English). Students who take AP Environmental Science, along with the Environmental Council, often play a leadership role in advancing sustainability on campus.

The school's weather station and geographic location near Narragansett Bay provide countless opportunities for learning. All upper school students have service learning opportunities to help clean and mark the east side of Providence's storm water drainage system. Younger students, including some as young as four years old, explore and study Moses Brown's 33-acre campus as their own environmental lab, counting trees, identifying plants through leaf structures, and collecting bug samples. Students take field trips to outdoor settings, such as apple picking and to local farms. Middle school students begin the year with a four-day overnight trip to one of three outdoor education centers.

Every year, the school programs events that are meant to educate and raise awareness of environmental issues. For example, each year during Earth Week, the entire school gathers for a worship meeting (a Quaker school practice) focused on the theme of sustainability. There also are learning opportunities for faculty and staff throughout the year. For example, last year Julia Gold, climate change program manager at the Rhode Island Department of Health, presented a workshop on the anticipated influence of climate change on the health of Rhode Islanders.

As a Friends school in the 21st century, Moses Brown is committed to the goal of environmental sustainability. The school is guided in its work by the Quaker testimony of stewardship, simplicity, peace, integrity, community, and equality, which

constitute the core of the school's values, and speak to community members' collective responsibility to each other, the campus, the local area, and the planet that all share.

Rhode Island College, Providence, R.I.

A community partner in building a sustainable future

Rhode Island College (RIC) is dedicated to enhancing the environment of those that learn and work on its campus, and is implementing many new initiatives that decrease costs, improve human health, and enhance sustainability learning. The college's first sustainability efforts date back to the last decades of the 20th century; however, the growth and diversity of its current programming are a result of a more recent campuswide effort to make the college a model for sustainable practices and programs. Significant accomplishments include establishment of the Rhode Island College Green Team in 2009, and the development of many cost-saving initiatives by campus offices and divisions through waste reduction, recycling, energy efficiency, green cleaning, and sustainable grounds management.

Rhode Island College is serviced by a central heating plant that uses both light oil and natural gas. The plant provides steam for heat, hot water, and, in some cases, buildings' steam absorption chillers for air conditioning. Buildings on campus are continuously being improved to incorporate more efficiency in lighting, heating, and cooling with operation and design. The school has worked with AMERESCO (an energy services contractor) to implement fuel and electrical efficiencies across the campus.

As a result of improving the condensate return to the central steam plant from January 2011 to January 2014, RIC saved some 370,000 gallons of water. The college is replacing faucets, toilets, and shower heads with fixtures that use less water, and, working with AMERESCO, is also implementing water conservation measures in residence halls.

Each year, graduates don caps and gowns that are made from recycled plastic water bottles, and collected after graduation to be repurposed a second time into carpeting. The college decreased its use of dumpsters by 55 tons from 2015 to 2016, in large part by working with Goodwill Industries of Rhode Island, which helped to divert tens of thousands of pounds from the landfill by collecting the school's used clothing and e-waste, including used batteries and printer cartridges.

Having installed 12 water bottle filling stations, the college eliminated over 80,000 plastic water bottles from entering the trash stream. Working with North Star, the college has taken books and journals that have been digitized off its shelves, recycling the material to be pulverized and repurposed into home insulation, diverting over 75 tons of materials from the landfill. Additionally, during a renovation project, over 90 percent of construction waste was diverted from the landfill, in part by offering classroom furniture to other state agencies or schools in the state. Any and all scrap metal that could be salvaged was put out to bid and sold to metal recyclers.

The Keefe Transportation Center offers transportation via Rhode Island Public Transit Authority to some 50 locations throughout the state. Zipcar also is available for short rentals, and the center has an electric vehicle charging station where electric vehicle owners can charge their vehicles for up to four hours.

Outside air is brought into all of the buildings, and air filters are changed out as determined by best practice standards. Carbon dioxide and radon sensors detect changes in the air quality, and notify facility management of any potential problems. The custodial crew uses nontoxic, Green Seal certified Genesan cleaning agents in all of the buildings on campus. The use of these products eliminates hazardous toxins discharged into the campus wastewater system, and the college grounds crew regularly plants native plants that survive on rainfall rather than irrigation.

The college offers multiple services, programs, activities, and supports that promote sound health and wellness practices, and takes a comprehensive approach to addressing physical, social, and mental health, known as the health triangle. For example, the college's Health Services' holistic approach emphasizes prevention, risk reduction, and education to assist in making lifelong healthy choices. Emphasis is on open recreation, personal fitness, health, and wellness, regardless of age, gender, race, or skill level.

All freshmen take a first year seminar class. These courses are housed in many different departments, and delve into a sustainability theme. For example, the anthropology course examines issues related to waste; biology examines issues related to air and water quality; and chemistry examines issues related to food production and safety. These classes are designed to teach students how to work

together solving current issues related to climate change. In addition, the college launched a bachelor's degree in Environmental Studies in fall 2015, which takes an interdisciplinary approach, focusing on how humans interact with their environment and the essential and reciprocal relationship between humans and the natural world, while exploring how to move toward a more sustainable future for human and natural systems. Environmental studies and sustainability programs have been developed for those entering the workforce in both undergraduate and post-graduate study. These programs include Green Business Practices, Urban and Community Farming, the Sustainable Communities Initiative, and the Green Business Forum.

Responding to labor market indicators that employment will grow in STEAM careers, the college has invested in new academic offerings, research investigations, capital improvement projects and business / community partnerships that support STEAM education. In addition to establishing several new degree programs, some of RIC's other achievements in STEAM include the creation of the Rhode Island STEAM Center; the disbursement of funding to local colleges and universities to encourage new and innovative science projects and research programs; and the Summer Undergraduate Research Fellows, a highly competitive program designed to increase research opportunities for undergraduates.

The college has worked closely with the Rhode Island Beekeepers Association in developing the Rhode Island College Bee Education Center, consisting of a three-hive apiary, a pollinator garden, an outdoor classroom, and a TV weather station. In 2016, over 600 students in kindergarten through 12th grade from all over the state came to the Bee Education Center on field trips to learn about the importance of honeybees to agriculture.

The college is actively engaged in the Rhode Island Environmental Educators Association, a collaborative network of individuals and organizations committed to environmental education; the Providence Sustainability Roundtable, which brings business and higher education together to share best practices in sustainability, overcome obstacles to sustainability in the city, and participate in ways to lower the city's collective carbon footprint; and the Rhode Island Department of Environmental Management and the Rhode Island Tree Council, which host workshops for landscaping companies.

Rhode Island College's strength is in its commitment to exploring sustainability options with on- and off-campus partners. The addition of a sustainability coordinator in 2012 has accelerated campus and community initiatives. While many challenges still exist, the school is well on its way to becoming a sustainable campus and community partner in building a sustainable future.

Virginia

Centreville Elementary School, Centreville, Va.

Student audits advance every area of sustainability

Centreville Elementary School, part of the Fairfax County Public Schools, is part of the 10th largest school district in the nation, and enrolls approximately 900 students, from prekindergarten through sixth grade, with a minority population of 28 percent. Centreville is ethnically diverse, with over 55 languages spoken by students both at home and at school. Centreville's environmental program empowers students to make choices and share their passion for the environment, while affording them hands-on experience with nature, sustainability, environmental literacy, and service learning. Centreville uses the environment as a primary vehicle for student learning, giving them multiple experiences that have them solving real-world problems through creativity, collaboration, communication, and critical thinking.

Students conduct audits in the areas of energy, water, waste, biodiversity, health, habitats, food, and transportation, and then create action plans based on the results of these audits.

Centreville installed a new chiller, which provides the school with more efficient delivery to the air conditioning system, water bottle filling stations, and rain barrels. The school also has made an effort to keep lights off when classrooms and buildings are unoccupied and to conserve water. The school switched from Styrofoam trays and bowls to paper, and has begun a schoolwide composting program, run by student members of the Green Team. Centreville received ENERGY STAR recognition in 2015. Sustainable landscaping in Fairfax County Public Schools is enhanced by a partnership with the U.S. Fish and Wildlife Service, and by participating in the district's own Urban Wildlife Habitat Program. This program engages students in planning, constructing, using, and maintaining a wildlife habitat on the school grounds to increase biodiversity, conserve water, minimize mowing, and serve as an outdoor classroom. The school works in conjunction with the Virginia Bluebird Society in maintaining a bluebird trail on grounds.

The school has received the EcoSchoolsUSA Green Flag, the highest honor in this National Wildlife Foundation (NWF)-administered program, and participates in its Cool School Challenge. As part of this program, students conduct audits in the areas of energy, water, waste, biodiversity, health, habitats, food, and transportation, and then create action plans based on the results of these audits. They devise public service announcements and youth-oriented Ted-style talks on the environment, implement new processes, work on outdoor education lessons to share with teachers, meet with custodians, write letters to the principal, and interview

the cafeteria managers to gather information and get approval for new initiatives. The school also benefits from sustainability interns from George Mason University in nearby Fairfax, Va., who help to lead efforts.

The school is home to three outdoor classrooms, a walking trail, and an impressive array of gardens. Each grade level has a garden, including: two raised-bed produce gardens; a butterfly garden; a topographically correct, scaled-to-size garden of Virginia with plants native to each region; a peach garden; two hydroponic tower gardens; and a greenhouse. The school initiates a green hour, during which students enjoy several hours of weekly outdoor education, as well as garden work. Centreville students raise trout for release in native Virginia habitats, and used as a connection to science content across the grade levels, looking at systems and life cycles, comparing and contrasting, and examining the environmental issues that affect the watershed.

All of the environmental work at Centreville is tied directly to the Virginia Standards of Learning. Centerville takes advantage of EcoRise environmental lesson plans and audits, and participated in the Virginia Governor's Environmental Project Based Learning Challenge. Each year, Centreville participates in the NoVA Outside Environmental Action Showcase hosted at George Mason University. Students participate in sharing their environmental projects. Several sixth-grade teams participate in the wind power competitions, and students in grades three through six participate in the recycling and upcycling challenges.

The school principal and STEAM/outdoor specialist search for teachers with an environmental education background when hiring, and careful planning and collaboration takes place on each instructor team. In second grade, students learn about the butterfly life cycle, as well as adaptations of animals, to correspond with their class butterfly garden and certified Monarch waystation. A fourth-grade science unit, which is integrated with social studies on Virginia ecosystems, hosts lessons outside on school grounds, and focuses on human effect on the environment.

Centreville promotes healthy eating and fitness with its PTA-run Boosterthon fundraiser, during which students run laps to earn money for their school, and receive healthy lifestyle lessons. The school partners with a local farmer to offer an organic market one day a week during dismissal. Students from grades three through six plan the gardens, take care of the gardens from planting to harvesting, run the store, order merchandise, take inventory, keep books, and use a cash register and scale. Each day, students receive a 30-minute recess, as well as physical education classes twice per week, at 40 minutes per session. The school supports Jump Rope for Heart and Girls on the Run participation.

Discovery Elementary School, Arlington, Va.

A Net Zero eco-action learning accelerator

Discovery Elementary School is the largest Net Zero Energy elementary school ever built in the U.S., and the first in the Mid-Atlantic region. Discovery is on track to be LEED Platinum certified by the USGBC. From the earliest stages of project planning, the design team and Arlington Public Schools identified Net Zero Energy as a primary goal for Discovery, so considerations for site footprint, solar orientation, building construction, and energy use were given top priority. With a capacity of 650 students in grades prekindergarten through fifth, the 97,588-gross square foot building is designed for an Energy Use Index (EUI) of 23 kBtus per square foot per year, one-third the EUI of an average elementary school. Discovery's sustainable features include 1,706 roof-mounted solar panels; three-ply built up roof with two layers of ENERGY STAR cool roof coatings; a geothermal well field; solar preheat of domestic hot water; 100 percent LED lighting; ideal solar orientation and shading; and exterior walls with high thermal mass using insulated concrete forms. Discovery's solar photovoltaic array became operational in January 2016. Since April 2016, the school has been operating as a Net Zero energy building. For fiscal 2016, Discovery achieved a net EUI of 11.7 and an ENERGY STAR score of 100. Operating at an energy cost of $0.39 per square foot in its first year, Discovery's energy cost is one-third the cost of other elementary schools.

Discovery's Eco-Action Team is a group of students, parents, teachers, and administrators committed to stewardship of the environment inspired by the NWF Eco-SchoolsUSA program. The team supports a variety of initiatives, including incentive programs to reduce lunch waste; collection of uneaten lunch food for donation; programs to promote walking, busing, biking, and carpooling to school; offering items like reusable lunch boxes, water bottles, and coffee mugs through the PTA; production of student videos on environmental topics; outdoor education through gardening and park cleanups; working toward the NWF Eco-SchoolsUSA Green Flag; and making it all fun by creating celebrations and having a "green" superhero visit the school to promote and reward green practices.

Discovery has several outdoor learning environments, including a butterfly garden for Montessori and kindergarten classrooms, an outdoor garden that uses rain barrels for its water source, and an outdoor exploratory lab. The outdoor exploratory lab is intended to allow students to study the natural processes and plant and animal species found in two bioretention basins. The east bioretention area features a 30' x 10' deck for class gatherings and work sessions and the west bioretention area features steps that may be used as amphitheater-style seating. Additionally, a second-floor outdoor solar lab provides flexible learning spaces to learn about the renewable energy sources onsite.

The Discovery Energy Dashboard integrates solar, geothermal, water, and environmental management systems, along with interactive real-time statistical analysis and long-term data tracking. Lunchroom trash is weighed on a daily basis, as is the number of pounds of food donated. Safety patrols and support staff count the number of walkers, bikers, bus riders, and car drop-offs daily to help track internal transportation statistics. Discovery participates with Arlington Transportation Partners (ATP), which measures performance toward reducing transportation footprints, earning the school Gold Award status with that organization.

Teachers use Discovery's extensive environmental signage in lessons. Because the school is divided thematically along environmental themes, the spaces used by Discovery students reflect the very real world beyond the classroom walls. For example, students in the Forest Hallway study among the six most common trees in Virginia. In the Galaxy Hallway, students are well versed in the basic structure of the cosmos. In the Atmosphere Hallway, students can identify the various types of precipitation. In addition, these teaching tools foster a love of, and appreciation for, the natural environment.

Students at Discovery use iPads and MacBook Airs as their two primary digital tools. Students in prekindergarten through first grade use class sets of shared iPads, stored in dynamic charging stations that provide electricity only when necessary, lessening plug load. Students in second through fifth grades are issued personal iPads for use at school and at home. These devices are the cornerstones of personalized learning at Discovery, and whenever and wherever possible, students and teachers use digital content, create materials digitally through the Google Classroom and Google Apps for Education platforms, and use curated digital content that provides both privacy and data instead of using traditional paper-based texts and materials.

School leadership redesigned the dining commons to enhance hygiene habits by requiring all students to proceed through a handwashing station prior to entering the

area. Teachers are encouraged to take brain breaks with students frequently. These can include a ride down the indoor slide, a walk outside, dance, or movement routines and games. Teachers are offered professional development on ways to increase students' movement. Each month, Discovery staff members participate in a monthly step challenge to promote the use of their devices to ensure active lifestyles for adults. Monthly recipe challenges invite staff to bring healthy, nutritious meals to share. An annual Biggest Loser challenge combats obesity.

Discovery has a robust school garden program and strong ties to local farms. After gathering materials and advice from farmers at Virginia's Goat Hill Farm, parents, staff, and students prepared raised beds and planted herbs and vegetables during the first spring that the school operated. The Eco Action team planted seeds and strawberry plants from the farm, and families took turns watering and caring for the beds over the summer. Students were able to eat the garden's food at lunch and at home. Discovery is a pick-up location for a community-supported agriculture program in which dozens of Discovery families participate.

Discovery is a National Wildlife Federation Eco-School, and uses its Green Flag-pursuing Pathways structure both to teach students about and advance sustainability in energy use; water consumption; carbon footprint reduction; improving human-powered transportation modalities (including annual schoolwide participation in International Walk and Bike to Work Day); reducing waste output (including significant reduction and elimination of paper-based technologies); outdoor learning opportunities (including regular trips to the Arlington Outdoor Education Association's Outdoor Lab); regular daily recess (including free play outdoors for all age levels); biodiversity, such as dedicated entomological gardens; use of environmentally safe and preferable natural products and cleaners; and students growing their own food.

Albemarle County Public Schools, Virginia

An ENERGY STAR partner with environmental studies academy

Albemarle County Public Schools (ACPS) serves 13,792 students in preschool through grade 12 in Albemarle County, Va., the sixth largest county by area in the Commonwealth of Virginia. A diverse locality of 726 square miles in the heart of Central Virginia, Albemarle County is a blend of primarily rural but also suburban and urban settings. ACPS has a longstanding commitment to environmental stewardship, formally beginning with an environmental management policy and environmental management system established in 2006. Through identification of environmental impact of school operations, the division has made progress steadily on reaching goals to reduce negative environmental impact, and has benefited from cost savings along the way.

Energy efficiency and conservation are a top priority in reducing environmental impact. Initiatives include increasing communication with schools about energy and water usage, coordinating energy team meetings, upgrading lighting, installing ENERGY STAR-qualified appliances, enhancing building automation systems, and upgrading equipment. Efforts are tracked and benchmarked with ENERGY STAR Portfolio Manager; 22 schools have earned the ENERGY STAR certification; and the district became an ENERGY STAR partner in 2008.

The district's first major renewable energy installation was completed in February 2012 to include a 42 kilowatt solar photovoltaic array, a Skystream wind turbine, and a solar thermal system. This installation sparked student interest in renewable energy, which developed into student-led advocacy for more solar in the division. Their successful campaign led to the installation of one megawatt of solar photovoltaic cells through a solar power purchase agreement pilot in August 2016. These installations provide more than 20 percent of the electricity needs for these schools, which is enough electricity to power 125 homes.

The district also is pursuing an energy performance contract to upgrade all classroom lighting to LED, which will result in improved learning environments for students and teachers with the added benefit of energy savings. ACPS consistently has achieved carbon dioxide emissions reductions as a result of energy conservation, and also has improved controls and scheduling, and upgraded to more energy efficient equipment. ACPS' average annual avoided utility costs are approximately $230,000.

ACPS has taken some steps toward reducing heat island effect. The green roof at Albemarle High School covers the administrative section of the building. Several schools have white roofs to reflect sunlight and heat away from the building. Many schools use highly tolerant and native plants in biofilters to retain and treat stormwater runoff. Recent Green Apple Day of Service projects at two schools involved students in planting native species in school biofilters. Outdoor classrooms are used throughout the division, and have evolved to include school gardens, views of solar panels, and math gardens.

Every school and support facility has a recycling program that accepts cardboard, paper, metals, and plastics. Division recycling includes electronic waste, rechargeable and alkaline batteries, fluorescent bulbs, TechnoTrash (CDs, diskettes, cords, et cetera), and construction and demolition debris. Additionally, many schools participate in a commercial composting program to increase diversion rates for organics. By recycling construction and demolition debris, it avoids approximately $15 per ton in tipping fees. To facilitate instruction and reduce paper waste, ACPS provides laptops to every high school and middle school student. Elementary school students have a laptop to every two students. Paper towels and

toilet paper are made from 100 percent recycled content, with paper towels using 50 percent postconsumer content.

School nurses and counselors are employed at all schools. The BeWell Albemarle program for staff provides opportunities to understand and follow an active lifestyle that promotes a culture of good health and wellness through education, wellness activities, and self-improvement. ACPS implemented an IPM program in 2008, and is proactive in reducing other environmental contaminants and asthma triggers.

During Farm to School Week, each nutrition manager prepares a local menu each day. Schools partner with local farmers to learn about farming and taste seasonal fruits, vegetables, and meats. These partnerships have led to permanent menu changes. About half of ACPS schools host onsite gardens or greenhouses. Finished compost from the commercial composting program is used for the onsite gardens. The Kohl's Growing Up Healthy Program is an innovative collaboration between the University of Virginia Children's Fitness Clinic, the Social Issues in Medicine course at the University of Virginia Medical School, and the Albemarle County Extended Day Care Program. In the program, University of Virginia medical students teach kindergarten through fifth grade students about healthy nutrition and lifestyle habits to maintain a strong body and mind.

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Through project-based learning, built and natural environments are enhancing student knowledge and understanding. A highlight of ACPS' environmental education is the Environmental Studies Academy, which offers students several environmental focus areas and spearheads environmental and sustainability education in the division. The academy model allows ACPS to roll out initiatives to a small group of students to test concepts developmentally before implementing them divisionwide. Academy students serve as mentors, role models, and guides to numerous middle school and elementary students.

The district developed an Environmental Art class, along with an English class that focuses on Environmental Law and Policy, which will be implemented in the fall of 2017. ACPS also is developing a combination Biology/Environmental dual class that focuses on data collection and experimentation. The Math, Engineering, and Science Academy, known as MESA, focuses on clean energy and sustainability as an umbrella topic during students' junior year, and students perform various

research projects around energy topics including a comprehensive life cycle analysis that explores competing products from cradle to grave. All fourth graders attend Camp Albemarle at a nature preservation area, and learn through stations and volunteers coordinated by the Thomas Jefferson Soil and Water Conservation.

Albemarle County Public Schools recently was recognized by the Virginia School Board Association when it received top prize in the Green Schools Challenge. The division received one of five nationwide school district scholarships from USGBC's Center for Green Schools. As a result, ACPS will receive ongoing support from the Center for Green Schools over the course of the next year, including access to Learning Lab classroom resources, and will benefit from connections with a broad network of school sustainability leaders.

Fairfax County Public Schools, Virginia

Ten million in energy savings in two years

Fairfax County Public Schools (FCPS) is the 10th largest school district in the nation by enrollment, with over 220 facilities, including 198 schools and centers, and a total area larger than four Pentagons. The district's comprehensive environmental education and sustainability program has been expanded into a systemic collaboration, dubbed Get2Green. Get2Green's mission is to promote student learning and action using the environment as a foundation, which is aided in part through a partnership with the National Wildlife Federation's EcoSchoolsUSA program. Get2Green is driven by students, employees, businesses, and the greater community through a variety of initiatives. These initiatives are aligned with the FCPS strategic plan.

Through the FCPS Sustainability Team, stakeholders meet biannually to support and strengthen existing programs, create new and innovative initiatives, expand student involvement, and provide greater community outreach. Get2Green has created competitive programs running divisionwide awareness campaigns, provided annual student internships with authentic sustainability experiences, and voluntarily engaged 150 schools in student-driven stewardship activities such as recycling, building wildlife habitat, conserving energy, and growing food. Many schools in FCPS, such as Flint Hill Elementary and Centreville Elementary, have implemented the NWF Cool School Challenge by sending teams of students to all public areas of the building to conduct audits. Action plans are developed based on the results of these audits, and executed with constant data analysis as part of the work the students are doing.

To further facilitate this work, a Get2Green web site was launched in summer 2016 that features several sustainability-related dashboards. The dashboards provide data on energy, recycling, and Eco-School USA progress in a way that encourages student and teacher engagement and competition among schools. This interactive web site was created as a way to inform students, employees, and the community about the effect FCPS schools have on the natural world, and how to reduce it. It has already proven to be a useful tool for learning, teaching, researching, and empowering change. In 2016, a group of interns from FCPS high schools worked with Get2Green to expand the resources on the web site. They visited classes at all grade levels to demonstrate the use of the web site and collect feedback to optimize functionality. They garnered enthusiasm for participation in a districtwide energy conservation challenge taking place in spring 2017, and performed facility audits with staff. They also developed an innovative marketing campaign to promote the challenge using social media platforms.

The Department of Facilities and Transportation Services (Facilities) is setting an example for students and the community by investing one third of every project dollar into sustainability infrastructure, such as geothermal, rainwater cisterns, LED lighting, variable refrigerant flow mechanical systems, water source heat pumps, biofilters, solar hot water heaters, highly reflective roofing, and pervious pavers. Through Get2Green and FCPS' partnership with the energy conservation company Cenergistic, FCPS has realized $10 million in energy savings in two years. During this same period, FCPS experienced an 11 percent reduction in greenhouse gas emissions. In 2015, 146 schools earned ENERGY STAR certification, the most of any school district in the nation.

FCPS has low-flow water fixtures and drought-resistant native plants, as well as sensors in bathrooms, rain barrels, and cisterns to conserve and collect water. Examples of customized projects during 2015 include restoring a wetland, vernal pool, and rain garden at Belle View Elementary; planting native gardens in new courtyards at Westgate Elementary; and creating a native garden of more than 1,500 square feet at Quander Road School. The Schoolyard Stewardship Mini Grant program run by Facilities provides funding to schools to implement projects that engage students in topics such as biodiversity, energy, school grounds,

sustainable food, transportation, and water. The program resulted in 51 projects during 2014 and 2015 that included native habitat gardens, edible gardens, pollinator gardens, outdoor classrooms, raised planting beds, and a "GroLab" with garden plants, compost tumblers, and resource material for students.

FCPS has long embraced alternative methods of transportation to schools, including walking or bicycle routes for students living within a set proximity from the school. The district sponsors bus pass programs for use on public transit, in addition to the county school bus system. For the past several years, the FCPS safe routes to school program has helped promote walking and biking to school through pedestrian and bike safety lessons for over 15,000 students. Through the program, the district also has developed and distributed signage to schools for Kiss and Ride areas that discourage car idling and promote walking. FCPS has implemented green cleaning, IPM, and healthy school environment practices that improve air quality and reduce asthma triggers.

Of the 198 schools and centers in FCPS, 160 have earned awards through the USDA's HealthierUS School Challenge, with 24 schools earning the Gold Award of Distinction for excellence in nutrition and physical education. There are vegetable gardens at 78 FCPS schools. Schools incorporate their gardens into the curriculum by weighing what they grow, doing cost/benefit analyses, studying the growth cycle of plants, and conducting research to create informational signs. The produce grown in a school's garden is used in culinary classes or for salad parties, added to the cafeteria inventory, or donated to local food pantries or low-income families at the school. FCPS has achieved the American Heart Association's Gold Award annually since 2009 for being a Fit Friendly company.

A decision was made early in Get2Green's existence to not develop or adopt a specific curriculum for environmental education. Instead, Get2Green works to integrate the environment as a concept across existing content areas. Examples of this include a first grade science unit focused on the cardinal and other birds through which students design bird habitat; a second grade science and social studies unit focused on the Monarch butterfly that asks students to build a butterfly habitat; and a fourth grade science and social studies unit focused on Virginia ecosystems with lessons hosted outside that focuses on the human effect on the environment. In total, FCPS has over 100 elementary science lessons that ask teachers to take students outside for investigations, and a guide to these lessons is available to teachers.

At the secondary level, FCPS Life Science students in seventh grade participate in a Meaningful Watershed Educational Experience by visiting a local stream and conducting a variety of qualitative and quantitative tests, which they subsequently use to evaluate the field site's health. Students use scientific equipment to test

water quality, examine macroinvertebrates, understand watershed characteristics, and identify the best management practices for storm water runoff. The district introduced outdoor backpacks in fall 2016 to facilitate outdoor education for students in all grade levels. These backpacks contain binoculars, magnifying glasses, and bird guides to make it easy for teachers and students to conduct lessons outside. Teachers were required to complete a workshop on using the backpack and on using the outdoors as a classroom for a variety of lessons before receiving the equipment.

The Eco-Schools program asks schools to create student-driven eco-teams with staff and community support, have students audit the school and community around a number of environment-related pathways to gain baseline data, develop an action plan, measure the action plan's success with additional audit data, and continue an iterative process of improvement. This process fits perfectly with districtwide work in project-based learning, STEAM, and inquiry learning in science and other subjects. Of the 90 FCPS schools registered as Eco-Schools, 33 have achieved an award. Twelve schools have achieved Green Flag status, the highest achievement a school can earn through Eco-Schools, and three have earned double Green Flags. FCPS has more Green Flags than any other school district in the country.

Washington

Lakeridge Elementary School, Mercer Island, Wash.

A curriculum that consistently brings nature into the classroom

In 2009, Lakeridge Elementary School, serving nearly 500 students, enrolled in the King County Green Schools certification program. Over the course of six years, it attained recognition as a level one, two, three and then four Green School in this comprehensive program, which encompasses waste reduction, energy conservation, water conservation, transportation education, and environmental education on all levels.

Lakeridge Elementary, along with the entire school district, participates in an energy benchmarking program run by Smart Buildings in Seattle. Lakeridge's maintenance and operations department uses this program to obtain energy use numbers and find ways to reduce usage further. All indoor and outdoor lightbulbs were replaced with LED lights. Students learn the importance of monitoring energy use and turning off computers, appliances and other equipment when not in use. Many classrooms have light timers and sensors. Water conservation consists of student educational campaigns, and recently added low-flow faucets in bathrooms and classrooms are reducing water usage by approximately 20 percent. The school received ENERGY STAR certification in 2014.

In fall 2016, Lakeridge ran a food waste reduction campaign during which students created posters all around the school teaching students about the effects of food waste, and helped weigh food compost after each lunch for several weeks. Students made announcements every morning over the loudspeaker and in the lunchroom with facts about food waste and its heavy environmental impact. As a result, Lakeridge reduced food waste by 15 percent. The Lakeridge PTA is active in supporting the green team by educating parents about sustainability, with lessons about everything from packing waste-free lunches to running zero waste classroom parties and school events. The PTA provides room parents with compost bins and party supplies, making every effort to run zero-waste events.

The district conducted extensive water and air quality testing to confirm Lakeridge had no lead, radon, or other possible contaminants, and the school continues to actively implement an air quality management plan. The school participates in the HealthierUS School Challenge, has a coordinated school health plan, and participates in a farm to school program. The garden club helps to educate students about nutrition and sustainability, and its produce is used in the school cafeteria. Parents volunteer to run a walkers club daily after lunch. No candy is used as a reward. A full-time, licensed youth and family services mental health counselor provides social and emotional support, education, and enhancement to students, as well as consultation to staff, parents, and administrators.

Students attend a three-day NatureBridge environmental science program in the Olympic National Park, which offers the opportunity to learn hands-on science in an International Biosphere Reserve.

Every September, Lakeridge hosts re-education on being a green school, this year featuring a new, student-created video. The school offers an Earth Week celebration that involves a different activity each day. Student green team members share daily green tips, go around the school daily to collect recyclable materials from all classrooms, visit classrooms frequently to promote conservation practices, and have started a contest to engage students in conservation actions. The PTA has appointed a green team to their board of directors to ensure that environmentally smart policies are followed at all times.

Environmental and sustainability topics are integrated into Lakeridge's science lessons. Students attend a three-day NatureBridge environmental science program in the Olympic National Park, which offers the opportunity to learn hands-on science in an International Biosphere Reserve. Students also monitor the dynamic Elwha River system, collect and identify macroinvertebrates in Barnes Creek, and study the adaptations of local mammals. Students spend time learning about Puget Sound, which includes marine ecology and the effect of human interaction with the

environment. They participate in field experiences at local beaches and the waterfront aquarium. They visit a salmon hatchery, where they learn about and acquire salmon eggs, and raise them until they are ready to be released into the water. Students visit the Mercer Slough to learn about the effects of environmental changes on plants, animals, and the air we breathe.

All grades have the opportunity to work and plant in the school garden. Second graders raise caterpillars to butterflies and learn about releasing them to migrate south, while learning how air quality changes migration patterns. Kindergarteners raise chicken and duck eggs until they hatch, while learning about the life cycle and meeting farmers who adopt the birds and take them on to the next part of their lives.

Green Gables Elementary School, Federal Way, Wash.

Wheelchair accessible gardens allow all students to benefit

Green Gables Elementary School is an active partner with the King County Green Schools program, now at level three, demonstrating results achieved in waste reduction, recycling, energy, and water conservation. Environmental stewardship is woven into every aspect of the Green Gables school day, from the classroom, to the lunchroom, to the playfield.

Green Gables was the first school in the district to initiate comprehensive recycling and composting, increasing its recycling rate from 50 to 61 percent. Because of these changes, in 2009, Green Gables traded its eight-yard garbage container for a six-yard container. Green Gables sets heating and cooling points at 68 to 70 degrees, with a programmable HVAC system for weekend and vacation shutdowns. Energy and water use are benchmarked using EPA ENERGY STAR Portfolio Manager, with the school being certified in 2001. The green team reviews that data and implements practices in the school, including a conservation practice checklist placed on each classroom door. The school has decreased its energy use 15 percent and greenhouse gas emissions 16 percent over five years. In order to ensure consistent low-flow water rates, fourth and fifth graders tested the water flow of building faucets and reported findings, ultimately repairing four fixtures. Over a single year, Green Gables decreased its water use from a monthly average of 39 centum cubic feet to 32 centum cubic feet. The school collaborated with the city of Federal Way and the nonprofit organization Friends of the Hylebos to install two rain gardens. Green Gables was the first school in the district to construct an organic wheelchair-accessible garden. In order to minimize water usage in the garden, the school installed a drip line watering system.

Every staff member is involved in the promotion of personal health and fitness. Green Gables celebrates an annual walk to school day. With the support of the physical education teacher, staff members track steps walked and set personal fitness goals for themselves. A weight reduction program has increased individual weight loss success rates. Produce from the Green Gables garden is distributed to school families, many who do not have access to fresh organic foods. Before- and after-school fitness activities routinely are available to students and staff. Students participate in the Great Breakfast Challenge, the Walk a Mile Club, PTA-supported walk-a thons, and the annual Jump Rope for Heart fundraiser. Curricular programs include: Fit Kids: Healthy Choices, Healthy Lives, The Great Body Shop, Beecher's Pure Food Foundation Kids Workshop, and From Seed to Table: A Free Farmers Market. Throughout the year, air and water quality is monitored. The Capturing Kids' Hearts initiative, positive behavior interventions, and restorative/mindfulness practices are used in order support the social/emotional wellbeing of staff and students. Students spend at least 150 minutes each week in physical activities, with at least 50 percent taking place outdoors.

Green Gables' environmental education is project-based, integrating experiential learning with core standards. Curricular highlights include raising and releasing salmon, use of the school garden as a living laboratory, and weaving next generation science standards into thematic units of study. The school's green team has created and performed in a variety of plays and videos to promote selected environmental goals. Educational and outreach efforts include presentations on the "4 Rs" and a weekly litter patrol. The annual Earth Day celebration includes an art-based multimedia assembly on environmental issues and solutions. For the past six years, King county has presented assemblies focusing on waste reduction, recycling, and stewardship. Following these assemblies, King county provides classroom lessons on topics including garbology, habitat stewardship, and recycling leadership.

Green Gables was the first school in the district to construct an organic wheelchair-accessible garden.

Each year fifth-grade students go to Islandwood, an outdoor education center, to learn about watersheds, water conservation, and pollution prevention under the mentorship of University of Washington graduate students. Other field experiences include trips to Mount St. Helens, Issaquah Hatchery (FISH Program), Sound Experience, FOSS Waterways, and the West Hylebos Park. Students visit the Nisqually Wildlife Refuge to observe its many ecosystems. Students also visit an education center, where they perform experiments on water quality and habitat restoration.

The garden design and planting schedule were researched and created by students, and every classroom has a plot to maintain. Students also planned a farmers market, before which they researched the nutritional value of foods and created recipes to give to attendees. Storming the Sound with Salmon is a unique program that allows students to raise salmon from egg to fry. In this program, students research the salmon lifecycle, habitat, and environmental threats (both natural and human-made). Salmon's role within indigenous cultures of the Pacific Northwest is central to this study.

Wisconsin

Houlton Elementary School, Houlton, Wisc.

Big school sustainability efforts on the prairie

Houlton Elementary School focuses its energy in three critical efforts: 1) student leadership, 2) health and wellness, and 3) environmental sustainability. Houlton Elementary received a HealthierUS School Challenge Silver award in 2012-13 as well as a monetary award through the Healthier Together initiative from the Hudson Hospital Foundation. It was recognized as a Sugar Maple School by Wisconsin Green & Healthy Schools in 2015. The commitment this suburban public school, serving 225 students in grades kindergarten through five, with 35 staff, has made to these initiatives is so strong that it continues as administrators change, truly demonstrating that sustainability is an integral part of the school's culture.

Houlton students have opportunities to be active in different leadership groups, each advised by a team of adults passionate about supporting students in becoming independent and responsible thinkers, collaborators and problem-solvers, and positive role models. Among those student leadership groups, three directly support efforts to be Green and Healthy: R3 (Reduce, Reuse, Recycle) Squad, Health and Wellness Crew, and Garden Club. R3 Squad members accept responsibility to educate students about recycling, and remind classmates about procedures. The R3 Squad plans special announcements (Green Tips) and competitions (cleanest recycling materials and garbage) to raise awareness about recycling for America Recycles Day and Earth Week. For example, on each day of Earth Week they focus on conserving an item: White Out Day (use no paper), Yellow Out Day (use no lights), Blue Out Day (use less water), Black Out Day (use less electricity), et cetera. The Squad manages the composting schedule, assuring that students take responsibility for monitoring and emptying the compost bucket into the compost bin near the gardens. The school also made site changes to reduce environmental impact by planting native species to reduce erosion and increase biodiversity, and restored part of the school acreage to its natural prairie state.

The Health and Wellness Committee meets monthly. Items for purchase in the Student Leadership Council's School Store meet USDA guidelines for nutrition, and the school promotes alternative ways to celebrate birthdays, including a favorite board game or physical activity. Students participate in recess twice a day. The school tracks participation in an annual three-month long Family Fun and Fitness program, and local businesses donate prizes, such as gift cards, passes, and pedometers, to recognize student and family efforts to be physically active together. Monthly Minute to Win It physical activities are integrated into all-school meetings. The schoolyard includes low-impact games like bowling and cornhole so that students with limited mobility also can enjoy the outdoors. The parent group fundraised over $40,000 to put toward a new playground structure with handicapped-accessible standalone pieces. The structure is on track to be completed by June 2017. A healthy-eating recipe contest engages families to submit recipes for posting on the school's web site. Students voted on their favorite recipes, and three were prepared and served for lunch by nutrition services.

The school has constructed a larger and more functional greenhouse to support larger gardening projects year-round. The garden club is active March to November; students take turns working with volunteers during lunch recess to prepare soil, turn compost, plant seeds, pull weeds, and harvest vegetables. Each grade level has a gardening project supporting core curriculum, and families volunteer to weed, turn and screen compost, and harvest vegetables each week of the summer when school is not in session. A recent baseline assessment regarding student consumption of fruits and vegetables and a variety of foods across the food groups showed a significant disparity between the other five elementary schools and Houlton. When asked to what the school attributed their students' healthy eating habits, the teachers responded without hesitation, "It's the gardens!" The nutrition services manager added, "When students know the vegetables on the lunch line are from the gardens they planted and worked, they are eager to eat them!" Additionally, pictures in the cafeteria aligned with MyPlate help students make healthy choices. The nutrition

services manager works with the custodian and master gardener to assure compost is managed well.

Houlton has worked collaboratively with the township, local foundations, state agencies, and community volunteers to develop a long-range plan for enhancing outdoor learning spaces with gardens, a classroom, a restored prairie, a challenge course, and nature and fitness trails that will connect with a larger trail part of the St. Croix River Crossing Project. In addition to the grade-level garden work, culminating with fifth grade students focusing on a prairie restoration project and a rain garden in a low, wet area of the gardens, the school's curriculum develops different aspects of environmental literacy through integrated units of inquiry. Fifth grade students attend Camp Sandstone Audubon Nature Center in the fall, where they learn about nature conservation, wildlife preservation, and water quality. Other outdoor learning opportunities include writing outdoors, observation and scientific variables, experiments, study of biomes and habitats, field trips to county and state parks, tree farms, and an apple orchard. Houlton has developed a partnership with the Willow River State Park, from which a naturalist has come to the school to share resources and begin an after-school Nature Club.

Kromrey Middle School, Middleton, Wisc.

A sustainability star in new construction and old

Located within the Middleton-Cross Plains Area School District, Kromrey Middle School is an example of what happens when a school district and community embrace sustainability. The vision and concept for the new Kromrey Middle School building, constructed in 2013, was a direct result of the recognition received within the district for other sustainability initiatives. During design and construction, the school chose to invest dollars that could have been spent on LEED certification into additional green technology.

The school was awarded ENERGY STAR certification in 2016 with a score of 91, and U.S. Middle School Design Project of the Year 2016. In addition to the new facility, the Kromrey community is working to transform the habits of students and staff. In 2015, the school received the Wisconsin Technology Education Association Middle School Program of the Year, and was named Best Place to Work by Madison Magazine in its annual rankings in 2015.

In the third year occupying the new building, the 170 staff members are transforming the educational program to enhance learning for the 1,150 students in grades five through eight, and to use the building and school site as a teaching tool. Kromrey is

working to create a permanent shift in school culture toward daily healthy habits and sustainability practices.

Kromrey has a history of reducing environmental impact. Even before construction of the new facility, the school achieved ENERGY STAR recognition in its old facility each year from 2008 — 2013. Many steps have been taken to create a modern facility that incorporates sustainable practices and features. The new building has geothermal heating and cooling, solar hot water, and LED or fluorescent lighting plus daylighting to reduce the need for artificial lighting. More than a quarter of the landscaping is native, and building materials were sourced locally wherever feasible. There are many places inside and outside the school for students to gather in natural lighting and with views of nature, including an outdoor amphitheater and a living wall on the edge of a nature conservancy. The school has received recognition as a Sugar Maple school, the highest recognition possible from Wisconsin Green & Healthy Schools. The Student Council, comprising approximately 60 students from diverse backgrounds, is working with students and teachers to incorporate everyday environmental impact reduction techniques and make the best use of the resources of the new facility.

The school wellness committee promotes the motto of “Rest – Eat – Move” (REM) in order to motivate students and staff. Wellness activities are offered for Kromrey staff both at the school and at other district buildings. Mindfulness techniques are embraced and used in classrooms and staff trainings. All students are taught with the REM elements in mind in their physical education classes as well as in athletics. A district teacher supports Kromrey staff individually or in teams in stress reduction, resilience, self-care, and mindful practices, and helps staff incorporate mindful movement and relaxation into academics. Movement and breathing lessons that help calm and focus the mind and body are used in classroom content. The Center for Investigating Healthy Minds is conducting a research study with the fifth grade at Kromrey on using mindfulness techniques in the curriculum.

Excellence in environmental education has always been a goal at Kromrey, and the new building is advancing that goal. The school's proximity to Pheasant Branch Conservancy provides teachers and students an opportunity to work with environmental and conservation agencies to incorporate environmental education and outdoor learning. Since moving into a building with views of the adjacent nature preserve, teachers are writing curriculum to learn about and connect with the environment. English classes go outside for observations related to writing poetry or observational writing. In the summer of 2016, Kromrey staff partnered with Friends of Pheasant Branch Conservancy to develop outdoor inquiry units for fifth and sixth grade. All sixth grade students spend two days at Upham Woods Environmental Learning Center. Classes ranging from Choices and Careers to Technology and Engineering to Social Studies address environmental sustainability.

Washburn School District, Wisconsin

Crazy Creek chairs and clipboards for outdoor learning in any subject

Environmental responsibility, sustainability education, and health and wellness initiatives are part of the community culture around the Chequamegon Bay of Lake Superior. In 2005, the city of Washburn, Wisc. became one of the first ecomunicipalities in the United States, part of a grassroots initiative growing in a portion of northern Wisconsin. Washburn School District has embraced this initiative and made sustainability an integral part of the school culture and curriculum, with all schools being recognized as Wisconsin Green & Healthy Schools by 2009. The Washburn school board has developed strategic goals, including embracing the Wisconsin Green & Healthy culture. One of the innovative practices of Washburn is the creation of a Green and Healthy school coordinator position to propel major district sustainability initiatives forward. This includes oversight of all district environmental projects, review of district curriculum, integration of school gardens with the district food service program, and professional development for all staff. The district serves 587 students, 43 percent from economically disadvantaged households, in prekindergarten through 12th grade, with 94 staff in two buildings. Washburn also includes an early learning center for children from eight weeks old to school age, which serves another 40 children with eight educators.

In order to reduce Washburn's environmental impact and lower costs, the district has implemented a variety of energy-saving initiatives such as upgrading lighting, switching from electric to natural gas hot water heaters, districtwide recycling, and composting of garden waste. A team of students have created a community outreach recycling program where they collect shiny paper from the school and businesses and bring it to a recycling center. To reduce transportation emissions,

classrooms take walking field trips instead of using buses whenever possible. Students in the ecology club choose an environmental topic each year and educate their peers with ongoing projects, culminating with an expert guest speaker during an all-school assembly on Earth Day. Algebra classes conducted calculations of alternative transportation use to school. Washburn uses innovative invasive species removal techniques in its prairie restoration project, including using goats to eat invasive vegetation.

Health and sustainability go hand in hand at Washburn. The district partners with community organizations, including the Alliance for Sustainability, University of Wisconsin—Extension for nutrition education services and agriculture agents, and a variety of local farms that provide local produce and milk in the cafeteria. Washburn was one of the first school districts in the state to adopt the AmeriCorps Farm-to-School program, which provides an innovative approach to improving childhood nutrition and decreasing obesity by creating healthy eating habits and increasing access to local foods. Through this program, Washburn students plant, harvest, and cook from the school garden every year, and have planted fruit trees that will provide apples. In elementary and middle school, students and staff alike enjoy the annual All School Walk Around the Block as part of Week of the Young Child, as well as a walk-a-thon, which is the main PTA fundraiser. Thirty minutes of daily outdoor recess is provided for elementary and middle school students, and brain breaks get the students moving for an additional 20-30 minutes per day. Students regularly engage in snowshoeing, skating, cross-country skiing, and canoeing. The Washburn Portrait of a Graduate program focuses on creating physically, socially, and emotionally healthy students. Sixty percent of students walk to school, and the high school recently created a cycling club.

> **Students grow tall milkweed and common milkweed to sell to people in the community who want to start their own butterfly gardens.**

Washburn removed old asphalt and replaced it with a bioswale, pollinator garden, high tunnel greenhouse, outdoor lunch area, compost area, aquaponics lab, and Monarch oasis. The district is home to a forested 40-acre Environmental Learning site. The school grounds include a 6,400 square foot vegetable garden and orchard, a steep sledding hill, a forested area for interpretive play, a U.S. Fish and Wildlife habitat restoration site, a pond, and an outdoor classroom that overlooks Lake Superior. These spaces are within walking distance for students of all ages.

The district aims to cultivate environmental stewardship, foster human health, and develop ecological sustainability through place-based education for the students of Washburn and community. Wisconsin Green & Healthy standards are imbedded into the Washburn core curriculum, and are listed on standards-based report cards

for prekindergarten through fifth grade students. The school gardens provide hands-on opportunities for teachers to enhance their curriculum outdoors, especially in environmental and cultural topics, while also building relationships with students. Examples include the Agripreneur Program, aquaponics lab, Monarch butterfly study, and the addition of several sustainability-based classes. Students grow tall milkweed and common milkweed to sell to people in the community who want to start their own butterfly gardens. Students participate in Adopt a Beach and Adopt a Highway programs, Monarch butterfly tagging and release, an annual leaf identification project each fall, and an insect collection in the spring. The ecology class does water quality testing, habitat analysis, and population density study. Educators have access to an outdoor classroom kit, including a set of Crazy Creek chairs and clipboards, to allow classes that wouldn't normally need to go outside to teach their content to spend time outdoors.

The University of Wisconsin – Stevens Point, Stevens Point, Wisc.

Sustainability as a unifying thread for postsecondary goals and achievements

At the University of Wisconsin (UW) —Stevens Point, all efforts unite to bring to life the institution's mission statement: "Through the discovery and dissemination of knowledge, UW-Stevens Point stimulates intellectual growth, provides a liberal education, and prepares students for a diverse and sustainable world." The school's mission, vision, and core values are advanced through a strategic plan, *A Partnership for Thriving Communities*, which targets four broad outcomes to help communities become vibrant, healthy, prosperous and sustainable. The strategic plan makes it very clear that sustainability is a campuswide initiative.

As a signatory of the American College and University Presidents' Climate Commitment, the Talloires Declaration, and the White House's American Campuses Act on Climate pledge — and also as a gold-rated member of the AASHE STARS program — UW-Stevens Point has a strong commitment to developing a sustainable future and working toward carbon neutrality. The school's 2011 carbon neutrality plan provides momentum for achieving the first benchmark target in 2020, and carbon neutrality before the planned 2050 goal. Progress thus far in reducing carbon emissions allowed the university to participate as one of only 13 higher education institutions in the Chevrolet Campus Clean Energy Campaign, with proceeds from the sale of carbon credits used to grow the campus sustainability program.

Energy conservation initiatives achieved through an energy conservation program have helped reduce the UW-Stevens Point carbon footprint while reducing the utility

budget. The school takes responsibility for the environmental impact of electricity use by purchasing renewable energy credits. UW-Stevens Point is on the EPA's Top 30 College and University list of largest green power users, and is the first university in the state to get 100 percent of its electricity from clean energy sources.

Many initiatives help to reduce environmental impact, while reducing costs. A campuswide composting program and a recycling center reduce landfill waste while saving dollars. Efficient water use is supported through dual flush toilets, water bottle refill fountains, a computer-controlled irrigation system, rain gardens, a green roof, and innovative stormwater systems on newly constructed parking lots. These initiatives help students become more aware of what the university is doing to be more sustainable, and how they can make decisions to lead a more sustainable lifestyle. The Student Greenfund uses student fees to fund sustainability-based projects on the campus and at its field stations.

Campus administration has taken a proactive leadership role in sustainability by participating and promoting sustainability programs on campus and in finding the necessary financial resources to move sustainability projects forward. School leadership not only talks the talk, but also walks the walk, emphasizing the importance of and commitment to sustainability as key aspects of the university's goals and success.

Another core value at the university is promoting community health. The university is the birthplace of the National Wellness Institute. The school supports both workplace wellness and student health through the Pointers Achieve Wellness (PAWs) program, an employee assistance program, a Student Health Promotion Office that employs student health advocates, a campuswide smoking ban, a cardio center, the Health Enhancement Center, intramurals and an outdoor rentals program, and Schmeeckle Reserve, a 280-acre conservancy area on campus, with five miles of trails and boardwalks, a 24-acre lake, and a large diversity of habitats that support numerous wildlife species. The university also offers several healthy and sustainable eating programs, including the College of Professional Studies Café, which promotes a sustainable food culture.

The school's facility services team is a leader in sustainability, and provides a healthy work environment. The Academic Custodial Work Unit is GREENGUARD

certified to ensure healthy, high-performance cleaning that helps keep staff and people in the buildings healthy. The grounds department runs composting and recycling programs, and manages the grounds using more organic-based fertilizers than synthetic-based fertilizers. Maintenance protocols meet indoor environmental air quality requirements that cover ventilation, low-emitting materials, chemical and pollutant source control, daylight and views.

Another way UW-Stevens Point promotes healthy living and a sustainable lifestyle is through a daily campus announcement program. Each day students are notified of activities, including concerts; craft making; movies and documentary showings; cultural, diversity and inclusivity discussions, that are relevant in today's society, as well as outdoor recreational trips, and organization meetings and speakers. These opportunities are a chance for students to improve their understanding of how personal health and wellness benefit them individually and as a member of society.

The university has committed to educating students, faculty, staff, and community members toward a more comprehensive understanding of sustainability, as well as how they can help society move toward a more sustainable future. After completing the school's General Education Program, each student understands that responsible global citizenship involves personal accountability, social equity and environmental sustainability. UW-Stevens Point prides itself on its tradition of developing sustainability-based knowledge within the student body, and on the trails that those students are blazing into the future.

The four colleges of the university engage in sustainability education in a variety of ways. The Doctor of Education in Educational Sustainability program developed by the School of Education has an anticipated start date of fall 2017, pending Higher Learning Commission approval. The College of Natural Resources (CNR) offers programs in natural resource disciplines, resource management, and environmental education. The CNR uses the Central Wisconsin Environmental Station, Treehaven and other managed properties as teaching field stations. For over 25 years, the Wisconsin Center for Environmental Education has worked to advance environmental education literacy through programs like the K-12 Energy Education Program and K-12 Forestry Education Program.

Educating students of all ages in sustainability principles is a primary goal of UW-Stevens Point. The Central Wisconsin Environmental Station is home to the Tomorrow River Community Charter School, a 2014 U.S. Department of Education Green Ribbon School, whose programs help further environmental education with the next generation of students. The elementary school is focused on sustainability and environmental education, and created a place where UW-Stevens Point students can practice their preservice teacher and interpretation classroom training in the field.

With a new science building scheduled to open in 2018 to meet the demand of students for advanced skills and knowledge in chemistry and biology, UW-Stevens Point will further demonstrate commitment and leadership in STEM education. When completed, it will meet LEED Gold standards. The university also promotes STEM education through events like STEM Exploration Days for middle schoolers and the STEMStravaganza.

The university partners with community organizations like Central Waters Farmshed, Friends of Schmeeckle Reserve, and the Portage County Public Library to host or conduct sustainability-based events for students and the community as a whole, such as the Schmeeckle Candlelight Hike, Central Wisconsin Farmer's Tribute Dinner, greenhouse workshops and a local farmers market. Students are encouraged to become more involved with the community in order to develop an understanding of how they can make more sustainable decisions in their day-to-day lives on and off the campus. Students, university employees, and local community members all benefit from the knowledge, experiences, and community events that go along with receiving a liberal education at UW-Stevens Point, and community engagement strengthens the institution's strategic plan.

The University College Academic and Career Advising Center provides comprehensive career planning and job search resources to students and alumni. The CNR Academic and Career Advising Center provides similar resources more specific to green jobs and holds an annual career fair for students.

In short, sustainability is a thread in all UW-Stevens Point activities and operations, from those related to facilities and grounds, to curriculum and instruction, to health and wellness in and around campus.

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