

Leading the Way in Independent School Sustainability Initiatives



In the fall, Friends' Central began a momentous year of Sustainability initiatives for the School. From LED bulbs to solar panels, waste audits to a school-wide sustainability statement, Friends' Central is on a path towards significant energy conservation, becoming a true leader in green initiatives in the independent school community.

After partnering with the energy conservation and services company Ecosave on an energy assessment, four major areas were identified in which substantial savings could be achieved: lighting, building automation systems, replacement of HVAC equipment in Shimada Athletic Center, and other initiatives, including solar panel installation. Projected to save 38% of the energy used annually, these savings are the equivalent of eliminating the carbon emissions of 3,000,000 miles driven by passenger cars or the carbon absorption of 30,000 trees for 10 years.

Almost half of the energy savings will come from the replacement of old, inefficient forms of lighting with 10,000 LED bulbs or fixtures, which will result in a 60-80% decrease in the energy needed for campus lighting. The LED bulbs improve light quality and last up to 20 times longer than previous lighting.

Another quarter of the energy savings will derive from the use of sophisticated wireless building automation systems, which monitor conditions in all locations on both campuses and adjust heating and cooling for the actual outside weather conditions and use of the space. Data from all building energy use will be available on screens in the new Shallcross Student Center, opening this spring.

Fifteen percent of the energy savings will come from the replacement of the HVAC system in Shimada. These savings are so substantial that even with the addition of air conditioning, energy use will still be significantly reduced. The final 10% of savings will be generated by the 38 solar panels installed on the roof of the Language Building. Head of School Craig N. Sellers shares, "Our plan is to have the Language Building separately metered so it can act as a kind of 'energy laboratory,' allowing us to see and measure the impact of solar, creating an ongoing learning opportunity for our students. This will be a wonderful, visible example of our commitment to sustainability and energy awareness."

Waste Audits

In every division, FCS students are taking a leadership role when it comes to waste generated on campus. Through an initial waste audit in December, which will be repeated in the spring, students measure and compare waste generated by each division, place it into one of three categories – liquid, landfill, and composting – and brainstorm ways to reduce landfill waste and promote recyclable and reusable materials.

In the Lower School, grade 5 students, led by science teacher Tiffany Borsch and Sustainability Consultants Mary Ann Boyer and intern Sam York of Boyer Sudduth Environmental, collected bags of waste from one lunch period and sorted through landfill and food waste, determining what can be recycled, what can be used for compost, and what is bound for landfill. Students recorded their observations and weighed the waste, comparing the results by grade. They determined how much was generated in one day with 230 students on the Lower School campus. The result? Over 39 pounds of waste was recorded from the Lower School Dining Hall.

As the fifth graders arrived to a tarp-covered science class, Mary Ann quizzed students about the 5 R's. "Most students know the 3 R's: Reduce, Reuse, and Recycle," she noted. "I like to challenge them with two other R's: Refuse and Re-Earth. When you can, it's good to 'refuse' unnecessary items coming into the waste stream in the first place, and Re-earth refers to items that can return back to Earth or composting."

Students were surprised by the results of the audit, and together, they came up with ways to reduce waste. Anna K suggested, "Take only what you can eat" and if you want more, go back for seconds. Milo shared, "My parents pack my lunch in reusable containers." Tiffany believes this teaching is essential,

particularly beginning at a young age. She commented, "Teaching about sustainability is integral to who we are as a community. As change makers, these students will be tasked with solving the environmental problems previous generations created – resource depletion and degradation, population growth and food scarcity, habitat loss and decreased biodiversity. It is our moral imperative to teach our students to recognize and understand these problems, while also empowering them to create solutions."

Middle & Upper School students conducted their own waste audit on the City Avenue campus. In the chilly winter air, students sorted through bags on Felsen Common, surrounded by blue tarps labeled "food waste," "landfill," and "recyclables" and bags of items collected from the Dining Hall. Students counted 35 bags from one day (22 landfill bags and 13 bags of recyclables). The results from the audit showed that from the bags that were sorted: 63% of the waste was landfill, 14% recyclables, and 23% food waste. Upper School science teacher Phyllis Hansen shared, "Having an initial baseline of trash/recycling quantities, an educational campaign will follow that allows the Middle and Upper School students opportunities to evaluate their personal trash footprint and discover ways to conserve. The waste audit will be repeated in the spring, and students will quantify effectiveness of the campaign."

Miriam Fisher Schaefer, Director of Finance and Operations, shared, "The waste audits are part of FCS's broader school-wide initiative to reduce its environmental footprint and address ways to be more environmentally sustainable. Now that we have a baseline of data, we can make changes both behaviorally and operationally in how we can reduce our waste. This is just the beginning for Friends' Central in ways we can reduce our environmental impact while helping our planet."



Middle & Upper School Waste Audit



Middle School students taking part in Streamwatch



Spinach seed planting in the Natural Sciences studio in the fall

Sustainability Curricula, Service, and Clubs

In the Lower School, students in each grade are taught that they are connected to the earth and encouraged to take care of their school and their world. In science, students journey from learning about living and non-living things in grade one to evolution in grade three to food and food systems in grade five. Tiffany Borsch explains, “Sustainability is woven into the entire Lower School curriculum, both as an environmental awareness and as an element of social justice. Every one of us evolved from cells, and we are intimately connected to nature. How did native peoples treat the earth vs. how we treat it now? Also, every student is connected to the Lower School farm, with each child planting this spring, weeding, and harvesting all the way through the fall.”

One of Middle School’s signature service and curricular programs is Streamwatch. Started many years ago by former Middle School teacher Doug Ross, Streamwatch seeks to clean and monitor the health of Indian Creek in nearby Morris Park. Students evaluate the health of the creek, using everything from gardening tools to spectrophotometers; they then decide how to best maintain, preserve, and clean up the creek and neighboring park. Students learn about natural cycles, invasive plants, water run-off, and the importance of wetlands by caring for the riparian zone along the creek, working each week to perform tasks like removing invasive plants, picking up and discarding trash, and rebuilding the Indian Creek bridge.

Julia Beyer ’22 shares, “I decided to join [Streamwatch] because of how important it is to take care of the planet and nature around us. It taught me the importance of environmental sustainability, and that it starts at the local level.”

In the last few years, students involved in the Upper School Sustainability Committee have been very active, generating many initiatives that have taken hold in the community. In 2015, the Sustainability Club successfully persuaded the School to install eight water-filling stations on both campuses and purchase and distribute refillable water bottles to replace, and never sell again, plastic water bottles. In 2016, the Club suggested a switch from disposable whiteboard markers to refillable Pilot Boreen VBoard

Master markers, keeping 1600 single-use whiteboard markers out of landfills each year. That year, 134 new recycling bins of all sizes were purchased for classrooms, offices, and shared spaces, with several Middle & Upper School assemblies held about what to recycle and what to put in the trash. They also proposed that the administration replace the fluorescent light bulbs in the Middle School with low-energy LED bulbs, which began taking place campus-wide this fall. This year, the Sustainability Club designed and printed “paper towels come from trees” stickers for paper towel dispensers on campus, which is predicted to reduce paper towel use by 20%. Sustainability Club advisor Joel Dankoff shares, “The students have been thrilled with the Administration’s responsiveness and dedication to the environment. The Sustainability Club’s actions demonstrate a commitment to influencing school policies and demonstrate that students *can* make a difference.”

In celebration of Earth Month, teachers were encouraged to conduct at least one lesson during the month of April that relates to the environment, Earth, or sustainability. Lesson themes include:

- ❖ Conditional structures and ecology in French II
- ❖ The “zero garbage” experience in French IV/French Lit
- ❖ Exploring the problem of light pollution in conjunction with Earth Hour in Physics I Advanced
- ❖ Discussing Aldo Leopold’s concept of a “land ethic” and Rachel Carson’s leadership in regulating chemical pesticides, which led to the formation of the EPA in American History
- ❖ The grade 8 Mask project, which requires students to bring in packaging to be recycled coordinating with the testimony of StewARTship; items are counted before and after to see how much was repurposed for Art

Organic Landscaping with Doug Linton '68

In 1997, arborist Doug Linton made FCS one of the first pesticide-free schools in the area. A clover-free field was his original goal, and he began by halving the recommended pesticide quantity. This worked, but Doug remained concerned about the toxicity of the chemicals. "I've stepped on garlic before with bare feet, and within ten minutes, I could taste it." What, he wondered, was getting into children's more sensitive systems? After trying smaller doses of an allegedly safe chemical that was pulled two years later from the market, he decided to go natural.

"To replace synthetically produced pesticides and fertilizers," Doug recalls, "we needed to find naturally derived products and to implement landscaping techniques that resulted in healthier grass." Rather than spraying Roundup

wherever weeds appeared, Doug aimed to keep the grass healthy and the soil well-maintained so that fewer weeds would grow.

With time, Doug implemented a natural and sustainable system, from letting grass grow slightly longer to aerating fields frequently, managing water use carefully, moderate use of natural and organic herbicides, and regular soil testing to keep fields weed free. Today, the specific techniques he implemented for organic field maintenance remain in use. "We continue to pursue the goals Doug set 20 years ago," shares FCS grounds supervisor Dan Kallen.

One of the great benefits of Doug and Dan's work has been the return of insects



like dragonflies, ladybugs, and butterflies to Friends' Central's playing fields, producing more biodiversity on campus. Bugs may seem an insignificant part of the ecosystem to lose, but they are vital pollinators, as well as the main food source for many fish, birds, and reptiles.

For Dan and Doug, a crucial element of their work is education – teaching students and faculty about how they can improve their homes, community, and environment. "One takeaway from our efforts is that keeping lawns healthy and environmentally friendly isn't too hard," notes Dan. "All the products we use are inexpensive and commercially available. It takes just as much work to aerate a field as it does to spray pesticides, but the result is a lawn that is safer for our children and the environment." Ultimately, Doug, Dan, and the whole FCS facilities team hope their organic landscaping practices take root (no pun intended) on campus and spread throughout the Friends' Central community.

FCS Alumni/ae in the Field of Sustainability

Bob Hall '59 spent his professional career in R&D and Engineering related to LEDs and Photovoltaics (PV) – the direct conversion of sunlight energy into electricity. In 1983, after many years in the industry, he started his own company to develop and manufacture solar cells for solar electric energy panels.

Rich Ulmer '60 has been Chief Executive Officer, President and Director of InVitro International since 1994. InVitro are pioneers in the development and application of non-animal testing alternatives for irritation and skin toxicity testing.

Charlie Price '66 works in the niche of membrane desalination, essentially starting the dairy industry up 30 years ago. "We started removing protein from cheese waste, when back in the day, companies used to dump the whey, creating environmental issues," explained Price in a Spring 2016 *Quaker Works* interview.

Wayne Michaud '67 is Executive Director of Idle-Free California (idlefreecalifornia.org), a nonprofit



organization that raises awareness of vehicle idling in California, especially idling when parked.

Cyril Draffin '68 has been project advisor to the MIT Energy Initiative since 2015. His interests include cybersecurity of electric utilities and other energy systems; low-carbon energy including solar, other renewable energy generation, and nuclear; gas and coal production and carbon capture and utilization; information technology; and strategy.

It was due to **Doug Linton '68**, Friends' Central's beloved horticulturist and arborist, that, in 1997, the School became

one of the first in the area committed to pesticide-free, organic, and sustainable maintenance of all the athletic fields and inner campus (*see article above*).

Bradley Campbell '70 is CEO of the Conservation Law Foundation, a leading environmental organization devoted to a thriving New England, and CLF Ventures, an incubator of market-based environmental solutions. His many experiences include being a former White House senior appointee during the Clinton administration, the Regional Administrator at the U.S. Environmental Protection Agency Mid-Atlantic Region, and serving as Commissioner of the New Jersey Department of Environmental Protection.

Edward Whereat '78 works at University of Delaware's College of Earth, Ocean, and Environment as Program Coordinator for a volunteer-based water quality monitoring program managed by the DE Sea Grant Marine Advisory Service.

Liz Fried '71, a City Councilperson in New Rochelle, NY, is working on a Sustainability Plan called GreenNR,

Sustainability Statement

The latest development in the realm of Sustainability efforts at Friends' Central is a new school-wide Sustainability Statement, created by the 20 faculty, staff, and student members of the Sustainability Committee, which was approved by the Board of Trustees on March 19, 2018 (*see Letter from the Head of School on page 2 for the statement*).

The continual desire of our faculty, staff, and students to find even more ways to peacefully change the world ensure that Friends' Central remains ever committed to creating and maintaining a sustainable community. QW

FCS Alumni/ae in the Field of Sustainability *cont.*

ensuring that the city is environmentally responsible, economically vibrant, and socially equitable.



Stefanie Zeldin '79 is the co-founder of a sustainable products company called in2green (www.in2green.com). In2green is a pioneer and has won many industry awards for product development in eco home textiles – specifically for products made with recycled cotton.



Sarah Mendelson '80

Sarah Mendelson '80 is distinguished service professor of public policy and head of Carnegie Mellon University's Heinz College of Information Systems and Public Policy. Through 2018, Mendelson will serve as a distinguished fellow at the International Youth Foundation, where she will incubate an initiative called "Cohort 2030" that aims to grow the generation that knows about and demands the implementation of the Sustainable Development Goals.

Claudia Zeldin '81 is celebrating 15 years as a partner at Growth for Good, a small consulting firm specializing in strategic planning, fundraising, and marketing for nonprofits. She is also an active supporter of the Prospect Park Alliance. Prospect Park is the flagship park of Brooklyn, New York City. The Prospect Park Alliance partners with the NYC to preserve and maintain the Park.

Alexander Klein '83 is Supply Chain Manager for APL Logistics, where he has been working with the Carbon Disclosure Project (CDP) measuring carbon output of various shippers. He has developed programs to measure carbon output in transportation and warehousing and identified opportunities for reducing the output. He also works with major shippers, retailers and manufacturers to coordinate with their corporate sustainability programs.

In 1995, **Dominique Hawkins '84** founded Preservation Design Partnership (PDP) as a planning and design practice focusing exclusively on offering high-quality professional services for clients with nationally significant historic sites and buildings. Hawkins has served as Preservation Officer for the LM Township (1997-2014) and Morris County, NJ (2003-present). Her work has been recognized with several preservation and design awards.

Rachel Fertik Edgerton '91 is an Environmental Protection Specialist at the EPA Headquarters in the Office of Water (OW) Clean Water Act (CWA) Section 404 regulatory program. She is a policy analyst specializing in providing scientific information to inform policy options and decisions.

Ilmi Granoff '95 is Director of ClimateWorks Foundation's Sustainable Finance Program. He is an attorney and policy expert with experience in environmental law and policy, sustainable development, energy and infrastructure finance, and public-private partnerships.

Benjamin Hertz-Shargel '97 is VP of Data Analytics, Energy Hub. His company "controls fleets of smart energy devices in people's homes, creating 'virtual power plants' for utilities, using energy reduction to displace dirty fossil fuel generation." He speaks frequently at clean energy technology and policy conferences.

AnnMarie Polsenberg Thomas '97 teaches classes at the University of St. Thomas on Environmental Sustainability and Innovation for business and engineering students.

Rob Crauderueff '01, CEO and Founder of Crauderueff & Associates (C&A), brings more than a decade of experience advancing green economic development projects in New York City and across the nation. His accomplishments include receiving the 2009 Green Roofs for Healthy Cities International Award of Excellence for Civic Engagement.

Joseph Abel '03 is VP of Operations at Sungage Financial, a leading solar financing company.

Amy Chapkovich '12 works at the Lower Merion Conservancy, an environmental and historic structure conservation non-profit in Gladwyne. She organizes educational programs and shares conservation and nature news.

If you or one of your FCS classmates is engaged in this important work, please let us know at communications@friendscentral.org