U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

# School Nominee Presentation Form

## ELIGIBILITY CERTIFICATIONS

### School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades Pre-K-12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity(DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

## U.S. Department of Education Green Ribbon Schools 2015-2018

X☐ Public ☐ Charter ☐ Title I ☐ Magnet ☐ Private ☐ Independent ☐ Rural

Name of Principal: Dr. Erin Russo
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: Discovery Elementary
(As it should appear on an award)

Official School Name Mailing Address: 5241 36th Street, North Arlington, VA 22207
(If address is P.O. Box, also include street address.)

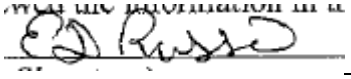
County: Arlington State School Code Number *: 12

Telephone: 703-228-2685 Fax: 703-237-6269

Web site/URL: http://discovery.apsva.us/ E-mail: erin.russo@apsva.us

**Private Schools: If the information requested is not applicable, write N/A in the space*

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.



Date: January 27, 2017

(Principal's Signature)

Name of Superintendent: Dr. Patrick Murphy
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)

U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

District Name: Arlington County Public Schools

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

District Name: Arlington County Public Schools
I have reviewed the information in this application and c

(Superintendent's Signature) Date: January 27,2017

(Superintendent's Signature)

**Nominating Authority's Certifications**

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: Virginia Department of Education

Name of Nominating Authority: Dr. Steven Staples

(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

Date: January 27, 2017

(Nominating Authority's Signature)

## SUMMARY AND DOCUMENTATION OF NOMINEE'S ACHIEVEMENTS

Provide a coherent summary that describes how your school is representative of your jurisdiction's highest achieving green school efforts. Summarize your strengths and accomplishments in all three Pillars. Then, include concrete examples for work in every Pillar and Element. Only schools that document progress in every Pillar and Element can be considered for this award.

## SUBMISSION

The nomination package, including the signed certifications and documentation of evaluation in the three Pillars should be converted to a PDF file and emailed to green.ribbon.schools@ed.gov according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509
Expiration Date: March 31, 2018

**Public Burden Statement**

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

# Summary Narrative / Abstract

Discovery Elementary School is the largest Net-Zero Energy elementary school ever built in the United States of America, and the first in the Mid-Atlantic Region. Originally budgeted to be LEED Silver, Discovery is on track to be LEED Platinum certified by the U.S. Green Building Council under LEED BD+C: Schools (v2009). Certification results are anticipated Spring 2017. Discovery has achieved credits in Indoor Environmental Quality in Outdoor Air Delivery Monitoring, Low-Emitting Materials, and Indoor Chemicals and Pollutants Source Control.

In 2016, Discovery produced more power than it used through on-site renewable sources. A carbon-neutral producer of clean energy, the school offers a positive example of a global crisis solution, and emboldens students to be creative, active participants in such solutions.

Discovery is a community for students, of students, and by students. It is the people, not the building: Our children, professional educators and support providers, families, and network of colleagues and partners work together to ensure that every individual child's needs are met and that all children fulfill their potential and achieve what they choose. We recognize that childhood and lifelong personal health and wellness habits, along with conscientious stewardship of not only our school but our larger communities - Arlington, Virginia, America, and Planet Earth - are essential cornerstones for learning and living in the 21st century.

In December 2016, Discovery will host the United States Department of Energy's kickoff of the Zero-Energy Schools Accelerator, designed to "catalyze public sector ZE schools investments in the upcoming years using innovative and best-practice approaches to enhance ZEB programs[1]."

> "This is the greatest green school I've ever seen. It is fully integrated with the educational program and serves as a pedagogical tool."
>
> *– Rachel Gutter, Director, Center for Green Schools, speaking about Discovery Elementary School*

Discovery's cross-cutting thrust is our Eco-Action initiative. The Eco-Action Team is a group of students, parents, teachers, and administrators committed to stewardship of the environment. The Eco-Action Team is modeled after the National Wildlife Federation's Eco-School Program. The team supports a variety of initiatives, including:

- Incentive programs to reduce lunch waste
- Collection of uneaten lunch food for donation to the Arlington Food Assistance Center (AFAC)

[1] Girma, S., Torcellini, P., Pless, S., Livingood, W., Taylor, C., and Hartke, J. (2016). *Driving Market Adoption of Zero Energy Schools*. [White paper]. Retrieved November 23, 2016, from American Council for an Energy-Efficient Economy. aceee.org/files/proceedings/2016/data/papers/10_798.pdf

- 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 videos by students on environmental topics and shown on student produced news show
- Outdoor education through gardening and park cleanups
- Working towards the Green Flag through the National Wildlife Federation's Green School Program
- Making it all fun by creating celebrations and a "green" superhero who visits the school to promote and reward green practices.

Discovery is a National Wildlife Federation Eco-School, and utilizes its Green Flag-pursuing Pathways structure to advance student learning and school advancement about sustainability in energy consumption; water consumption reduction; climate change impact through carbon footprint reduction; improving human-powered transportation modalities, including annual school-wide participation in International Walk & Bike To Work Day; reducing overall 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; utilization of environmentally-safe and preferable natural products and cleaners; and students growing their own food.

We participate intensely with Arlington Transportation Partners (ATP), which measures performance toward reducing transportation footprints. Our large-scale participation with ATP has earned us Gold Award status with that organization, and we continue to implement their recommendations and solutions. Our lunchroom trash is weighed on a daily basis, as is the number of pounds of food we donate to AFAC, the Arlington Food Assistance Center. Our safety patrols and support staff count the number of walkers, bikers, bus riders, and car drop-offs daily to help us track internal transportation statistics toward our Green Flag benchmarks.

# Crosscutting Questions

## 1. Program Participation & Benchmarking Progress

The Discovery Energy Dashboard is the core of our data-driven analysis. A completely custom platform created for Discovery by CMTA in conjunction with VMDO Architects, the Energy Dashboard is a software platform integrated in our solar, geothermal, water, and environmental management systems, providing interactive real-time statistical analysis and long-term data tracking. This also allows us to extract precise data on the amount of power being used at any given time, and how much power we are generating, tracks our walk/bike versus car ridership data, and our daily measurements of food waste and donation, all of which can be utilized to report progress toward our Eco-School Green Flag benchmarks, our Arlington Transportation Partners objectives, and our commitment to reducing food waste with the Food Bus.

## 2. Awards

Discovery was the 2016 Project of Distinction for the Association for Learning Environments during their annual Exhibition of School Planning & Awards, the American Institute of Architects 2016 Honor Award recipient for Central Virginia, and was an award-recognized Early Childhood school project in 2016 for Learning By Design. Eco-Action accepted the Green Action Award presented by the APS Superintendent's Advisory Committee on Sustainability, and received recognition from the President's Environmental Youth Award Program for the U.S. Environmental Protection Agency's Mid-Atlantic Region for its eco-friendly practices in the Dining Commons.

## 3. Daily Operation & Sustainability

The school administration team, coaches, and instructional lead teachers regularly address Eco Action (our umbrella term for our sustainability efforts and participation in national and regional programs) during planning and policy meetings. Custodial and cafeteria stakeholders work with the school as well as the larger county programs and offices to ensure efficient and environmentally-conscious practices at each juncture. Our highly communicative culture has individuals and groups bring their questions, ideas, and concerns directly to decision-makers, allowing for innovative, creative, and immediate implementation of even the smallest idea to make a difference. Our students are deeply involved in our decision-making practices, through the representative Green Leaders who comprise our Eco Action Team, which operates in lieu of a traditional "student government." Environmental sustainability and best practices are one of the two chief lenses (the other being child-centered, whole-child-inclusive, research-driven pedagogical and psycho-emotional practices) through which each stakeholder at every level approaches management.

# Goals Area Narrative

## Goal Area 1
### Reducing Environmental Impact and Costs Element

### 1A. Energy Savings – Reduced/Eliminated Greenhouse Gas (GHG) Emissions

Our Eco-Action team is our master framework for both students and adults at Discovery. The five "stars" of Eco-Action include "Don't Litter;" "Walk, Bike, Bus, or Carpool;" "Donate to the Food Bus;" "Reduce, Reuse, Recycle;" and "Share What We Know about Going Green." These developmentally-appropriate tenets provide overarching objectives for our work: reduce waste and take ownership of our environments (local, regional, national, and global); actively partner with transportation stakeholders and community members to be healthier and smarter in our transportation choices; actively engage in sustainable food practices to benefit our school and those in our community; eliminate unnecessary waste through reusing and recycling everything we can including in Maker-like ways; and educate ourselves and others here and abroad about how and why we practice responsible custodianship of our world.

> "We will do our best to make our earth healthier and to make our school a better place."
>
> *– The Discovery Eco-Action Pledge*

From the earliest stages of project planning, the design team and APS 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 Pre-K through 5, the 97,588-gross square foot building is designed for an Energy Use Index (EUI) of 23 kBtu/sf/year. This ultra-low EUI is one-third the EUI of an average elementary school and enables on-site photovoltaic energy generation within a traditional school budget.

Achieving an EUI of 23 involved meticulous evaluation of the way APS builds and operates facilities. Discovery's sustainable features include 1,706 roof-mounted solar panels; 3-ply built up roof with two layers of Energy Star cool roof coatings; a geothermal well field; solar pre-heat of domestic hot water; 100% LED lighting; ideal solar orientation and shading; and exterior walls with high thermal mass using insulated concrete forms (ICF).

Discovery's solar photovoltaic array became operational in January 2016 and since April 2016, the school has been operating as a net zero energy building. For fiscal year 2016, Discovery achieved a net EUI of 11.7 and an Energy Star score of 100. Operating at an energy cost of $0.39/sf in its first year, Discovery's energy cost is one-third the cost compared to our other elementary schools. As a net zero energy school, Discovery does not generate direct greenhouse gas (GHG) emissions due to its onsite renewable energy source and in its first year of operation generated one-third of the total GHG emissions (direct and indirect) compared to other elementary schools. We anticipate in future years that Discovery's GHG emissions for direct and

indirect will be close to zero and that after a full year of operating the solar photovoltaic system, we will surpass our target net EUI of 0 kBtu/ft$^2$ and become net-positive.

In the first three months of operation (January 2016 through March 2016), Discovery's solar system returned over 25,000 kWh back to the local power grid. In April 2016 alone, Discovery returned 10,079 kWh to the grid, enough to power a typical Virginia home for one year, or approximately $1,119 worth of electricity at the time. Despite there being no incentives in place for creating a solar energy system in Virginia at the time and a mandatory contractual minimum charge and limitation of the power grid's ability to accurately meter our power output, Discovery was the first school in Virginia to undertake this sort of project.

Our roof not only features 1,706 solar panels, but uses highly reflectivity membranes, which in conjunction with on-site bioretention areas and permeable parking surfaces with drainage systems, significantly reduces Discovery's urban "heat island effect."

Doing the right thing may not always be the easiest or most popular thing, but being ecologically responsible and pursuing these cost-returning and environment-benefitting solutions for our community was, and remains, the right thing to do.

The design team for Discovery set an incredibly aggressive target of 0.15 Cubic Feet per Minute (CFM) for air infiltration (pertaining to the "leakiness" of a building, which lowers its thermal insulation efficiency). Thanks to fine tolerances of quality, we achieved 0.113 CFM during testing, 80% better than construction code requires and 50% higher than Federal guidelines.

Students are able to access visualizations of these systems and their real-time impacts through the Energy Dashboard. It can be accessed through large touch panels in the foyer, on the roof at the outdoor Solar Lab, or in a wheeled mobile version that can be moved into any learning space, as well as on mobile devices, as well as in an Augmented Reality headset, leading all of this information to be presented to students in developmentally-appropriate ways.

## 1B. Improved Water Quality, Efficiency, and Conservation

Discovery Elementary is irrigation free and utilizes a balanced approach to stormwater management. Storm water detention facilities have been implemented to handle a ten-year storm, at a minimum, and reduce post development runoff to less than pre-existing conditions. Rainwater is captured from the school's roof and conveyed to two large bio-retention basins at each side of the school frontage along 36th Street North. A bioswale is in the median of the west parking lot and permeable pavers are in two sections of parking stalls to handle vehicle runoff. The overall intent is to reduce runoff from our site and to treat remaining stormwater runoff prior to going into our local waterways.

This past summer all APS schools including Discovery underwent lead testing on all drinking sources. Our school district's water is fed by Arlington County's water utility and meets all federal Environmental Protection Agency (EPA) and Virginia Department of Health (VDH) safety standards. All drinking water quality reports are available online at the County website. Triannual lead testing is scheduled in subsequent years, to ensure continued water quality.

Discovery has several outdoor learning environments for their students including a butterfly garden for their Montessori and kindergarten classrooms, an outdoor garden that utilizes 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

our two bio-retention 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 utilized as amphitheater-style seating. Additionally, a second-floor outdoor solar lab acts as an extension of the indoor educational program and provides flexible learning spaces to learn about the renewable energy sources onsite.

Discovery has one main outside air system that delivers ventilation throughout the school based on CO2 sensors in the building. Our building automation system monitors in real-time the outside air system and reports any alarms indicating high humidity and high CO2 levels. This real-time monitoring allows us to respond quickly to problematic areas.

In addition, APS has a certified Indoor Air Quality (IAQ) specialist that works with our schools to manage, report and correct indoor air quality issues (e.g., humidity, moisture). We use our TMA Work Order System as our IAQ reporting tool.

## 1C. Reduced Waste Production

As discussed under cross cutting questions above, Discovery’s Eco Action team – comprised of students at all grade levels, staff, and parents – meets monthly and carries out a variety of programs to reduce waste and raise awareness of environmental issues. These programs include reducing lunchroom waste through promoting trash-free lunches, recycling, donating uneaten food to The Food Bus, and tracking weekly trash weight; creating short videos on environmental topics, especially waste reduction and recycling, for the school’s morning announcements; planting and tending herbs and vegetables in the school garden, for use at lunch; creating collection bins placed in classrooms and other key locations (by copiers) for paper that was used on one side, for use by Extended Day for art projects; promoting, through posters and videos, a holiday drive to donate gently used toys and clothing to an assistance center; promoting, through posters and videos, an annual collection of small electronics for recycling and reuse; creating an Eco Code that encourages all students to reduce waste and conserve resources; and placing large recycling bins in hallways in the last days of school, to divert waste from the landfill.

Discovery purchases only chlorine-free copy paper from Finch Paper, which is recognized by the Sustainable Forestry Initiative. We use all non-toxic art materials including kiln room supplies, clay, paints, inks, and more, inspected every year to ensure all materials are safe for students.

We utilize the Google Apps for Education infrastructure for practically all file management, including for purchasing. Rather than creating one-shot paper items as most schools and districts do, we utilize sustainable, free, archivable digital resources. Accessible on any device, we make every effort to avoid printouts of data, worksheets or other static traditional instructional vehicles, or memoranda except when required by law or necessary to support a specific individual.

## 1D. Use of Alternative Transportation

We encourage alternative modes of transportation at all APS schools including Discovery. Discovery achieved 100% of the LEED 2009 credits regarding alternative transportation including public transport, bicycle storage and onsite changing rooms, low-emitting and fuel efficient vehicles, including an electric car charging station, and parking capacity. APS also participates in the National Safe Routes to School Program to promote active, healthy lifestyles

and safe infrastructure that supports bicycling and walking. District-wide, APS follows Arlington County's no idling policy for all school buses.

Discovery partners with Arlington Transportation Partners (ATP) to support sustainable transportation practices. ATP's Champions program promotes biking, walking, carpooling, and using public transit to reduce vehicle traffic around schools and nearby neighborhoods. During the 2015-16 school year, Discovery achieved Gold level status by adopting an ART bus stop, creating a walking and biking club, creating staff carpools, adding staff carpool parking where none previously existed, completing employee commute surveys and travel tallies, creating transportation displays and celebrating staff Super Commuters. Discovery partnered with ATP, the PTA, and Safe Routes to School to achieve a 20% reduction of parent drop-off/pick-up and provide a bicycle repair kit for students and staff, and exceeded its goal: Controlling for inclement weather (both precipitation and low temperature), Discovery has seen an 26.61% decrease in single car pickup and dropoff in the October-to-January month range when comparing 2015-2016 to 2016-2017. (An average of 137 daily car events was recorded last year compared to 100 this year for the same month range.) Controlling for inclement weather comparing December 2015 to December 2016 saw a 53.13% decrease in single car pickup and dropoff for that month range. (An average of 256 car events was recorded last December as compared to 120 this December.) Comparing non-inclement weather data from September through December for the 2015-2016 and 2016-2017 school years, Discovery has seen a total average decrease of 20.35% in daily single car ridership events. (An average of 124 car events was recorded for the first half of 2015-2016 as compared to an average of 99 car events for the first half of 2016-2017.)

Discovery also participates in Safe Routes to School (SRTS). SRTS is a national program that promotes the practice of students walking or biking to school. Upon opening, Discovery registered and promoted Walking School Buses throughout neighborhoods. At Discovery, students and staff tally students who walk and bike to school. Teachers promote bicycle and pedestrian safety in schools, as well as hold Walk and Bike to School Day celebrations two times each school year. Discovery celebrates Bike and Walk to School Day in the morning as students arrive by walking, biking, and scootering to school. Teachers and parents distribute biker/walker tokens and walk/bike stickers. Discovery staff promote helmet safety by awarding prizes to students who ride bikes or scooters to school. Discovery staff also encourage students who live more than a mile from school to partner with other students in the school neighborhood and walk and bike together on a safe route. To encourage sustainable transportation, bike racks are located at the various entrances to the school. School safety patrols are trained to promote sustainable transportation practices. Patrols on buses track daily ridership and those in the daily pickup and dropoff rates of single car ridership, recording weather conditions as well, yielding data that is used by the Eco-Action team to inform our efforts to improve sustainability.

## 1E. Other Innovative Conservation & Environmental Impact Efforts

Students at Discovery utilize iPads and MacBook Airs as their two primary digital tools. Students in Pre-Kindergarten through First Grade utilize class sets of shared iPads, stored in dynamic charging stations that provide electricity only when necessary, lessening plug load. Students in Second Grade through Fifth Grade are each issued personal iPads for use at school and at home. The battery life of these devices is exceptional, further lessening plug load. These devices are cornerstones of personalized learning at Discovery, and whenever and wherever

possible, students and teachers utilize digital content, create materials digitally - especially through the Google Classroom and Google Apps for Education platforms, as well as curated digital content that provides both privacy and data protection as well as sustainable materials that require neither trees nor are heavy to transport while walking or biking - instead of using traditional paper-based texts and materials. Students will sometimes point out when a paper-based resource is being used thoughtlessly and have shown a significant preference for the facility, ease, archivability, and sustainability of these digital platforms.

Being as technology-rich as Discovery is, being conscientious of plug load is always important. We utilize a variety of sensors, timers, and switches to power down and power off resources when they are not in use and have been thoughtful in selecting devices that have dynamic power switching and control features, to ensure that nothing draws more power than necessary. Utilizing motion-sensors in all of our facilities and developing a conscious culture of "turn off, unplug" among the staff has been important in advancing this priority.

Our principal has been committed to what she calls a "paper-*light*" culture since before Discovery opened. While some local, state, and federal requirements require certain things to be printed, we have deeply committed ourselves to eliminating paper where we can. We host our weekly parent news and weekly staff news on a published Google Doc, delivered by email notification and accessible through our website. We sent home our start-of-year homeroom assignment and introductory letters by email to every family with a valid email on file, thereby reducing the amount of paper we sent home by over 85% in one instance alone. We've sought required consent signatures digitally, using existing state legal frameworks, instead of signed on paper. Each time we are faced with the possibility of printing, we stop and ask ourselves why, if it is necessary or just "what we've always done," and attempt to identify a way to avoid consuming those resources.

# Goal Area 2
## Improving the Health and Wellness of Students and Staff

### 2A. Integrated School Environmental Health Program

APS has employed an integrated pest management (IPM) program for the past 25 years and in fact were among the very first schools in the state to do so. Every school is inspected at least once per month by a licensed pest control technician supervised by a licensed pest control applicator on a published schedule. The pest control sighting log is the primary means of reporting pest control activity to the vendor, who checks it at every visit. Discovery receives a report whenever improvements in IPM implementation can be made, and APS Plant Operations provides training to do so.

The focus of the program is on inspection, sanitation, trapping, exclusion and education. Chemicals and supplies are sparingly used, preventing the introduction of contaminants from rodenticide, glue boards, pheromone traps, and baits.

Smoking is, of course, absolutely prohibited anywhere on or near school grounds. As a technology-rich school, we have taken care to sparingly utilize too-often-ubiquitous LCD or DLP projector technology, the lamps for which contain mercury. Instead we utilize all LED panels along with our LED lighting, which eliminates mercury from the devices altogether. Each room and area at Discovery features an air quality monitoring system that integrates with our

HVAC system, providing influxes of regulated and filtered fresh air when necessary. Near the Principal's Office, an emergency ventilation shutdown switch is available in the event of a significant contaminant event in or around the school, giving us emergency control to ensure harmful agents aren't spread.

All Discovery teachers teach the APS Health curriculum which focuses on age appropriate health topics. Our school nurse participates in these classroom lessons. Science lessons also capture environmental health awareness.

When Discovery opened in 2015, APS introduced a full microfiber cleaning program in partnership with our vendor, trapping dust and allergens and reducing the physical impact of cleaning on employees. Microfiber products include: wet and dry dust mop heads, cleaning cloths, extension poles, and dusting attachments. Surfaces are cleaned according to a color coding system, and a compartmented cart is provided which allows for separation of microfiber, recyclables and trash. Our Custodial staff has been trained in cleaning systems by the vendor and the APS Assistant Director of Plant Operations. A washing machine and dryer were purchased and installed on-site, so the microfiber materials can be laundered and rotated regularly as needed.

The cost savings, as well as the fact that microfiber picks up and holds a significant amount of dust and particles without chemicals, has been a significant gain in cleanliness as well as costs and labor. Both the Director of Plant Operations and Assistant Director of Plant Operations for APS are GS-40 certified in green cleaning programs.

APS sources GreenSeal® chemicals and supplies, which includes: neutral cleaner, glass cleaner, hand soap, paper towels, toilet tissue, floor stripper, floor finish, tile and grout cleaner, degreaser, carpet shampoo, carpet spotter, medium trash bags. Discovery does not use floor stripper or floor finish due to the flooring material, thus eliminating expense and negative environmental impact. The wooden gymnasium floor is finished with a water-based, low-VOC sealer. Vacuums are triple filtered and CRI® certified, trapping up 99.9% of dust particulates down to 3 microns. We use an auto-scrubber to maximize efficiency and reduce physical stress. A carpet extractor is used for the few carpeted areas we have, including the library, main office, and some entrances.

Dedicated recycling containers were placed throughout the interior and exterior building to facilitate the collection of recycling materials. Additional containers in offices, the kitchen, work rooms, etc. were placed for recyclable materials. Products collected: metal, plastic, paper, cardboard and batteries. Staff is responsible for picking up the recyclable materials and placing the materials in the recycling toters, or the recycling dumpster as appropriate. Most materials used in the schools are being recycled, including food trays, drink boxes, pizza boxes, aluminum cans, aluminum foil, cereal boxes, and cardboard boxes. Recycling products are is picked up by a vendor each week. Vendor provides report of the number of toters and dumpsters emptied each month.

Currently, APS Plant Operations is working on benchmarks and data collection for pounds of trash per person, and once implemented, Discovery will participate in the upcoming award program to generate healthy competition, broadening our participation in these important initiatives.

## 2B. Nutrition and Fitness Efforts, Policies, & Practices

With four Health and Physical Education (HPE) teachers for our approximately 600 students, health and wellness is a critical part of the curriculum at Discovery. All students at Discovery receive 30 minutes of Physical Education, three times per week. The gym itself is unique as it includes a rock wall and "smart" climate control system to create a comfortable and safe atmosphere. Our Physical Education goal is to provide students with the tools to live confident, healthy, and active lifestyles and help better cognitive performance in the classroom. A well-rounded program, the HPE program comprehensively addresses all of the Virginia state standards.

Students in Grades 3 through 5 participate in FitnessGram, the official assessment of the Presidential Youth Fitness Program. As a direct result of concerted efforts to increase and enhance student and staff fitness as part of our culture, Discovery has received Bronze recognition from APS.

All students participate in a Virginia standards-based curriculum which encompasses the five National Physical Education Standards to include psychomotor, cognitive, and affective skills. The development of social, physical, and emotional confidence that is inclusive to all students (including special needs) is at our program's core. We teach developmentally appropriate lessons that not only educate students on proper fitness and sports related skills, but allows them to have fun as well. In addition to learning how to move their bodies, students learn the health related benefits of regular physical activity, how to make healthy nutritional choices and the skills to continue to lead physically active, healthy lifestyles into adulthood.

In addition to the weekly PE classes, students receive 30 minutes daily of unstructured recess time. Discovery playgrounds are designed specifically to encourage free play and build strength and agility. Additionally, during recess, the students have access to a wide range of playground equipment and field space to provide maximum movement opportunities for all students. The outdoor fields can incorporate every major sport and are engineered out of the highest quality turf and materials to ensure safe play.

The Discovery Health and Wellness committee - which works in direct concert with the Health & Physical Education program - holds monthly Free Play mornings, with thirty minutes of supervised, active free play; holds Walk & Bike events three times a year throughout the seasons; and organized nearly 15% school-wide participation in the U.S. Marine Corps Marathon Healthy Kids Fun Run. They also organize Family Fitness Nights, weekly Tuesday night Wellness Nights featuring an adult basketball game that is regularly attended by roughly 20 parents, and helps support Girls on The Run. The Committee is also intensely involved in promoting handwashing and personal hygiene surrounding food habits. In December 2016, the school leadership redesigned the Dining Commons to further enhance hygiene habits by requiring all students to proceed through a handwashing station prior to entering the Dining Commons. A small investment in guide barriers and signage, and the provision of hand sanitizer and encouraging in-classroom disinfection as well, has seen a significant rise in handwashing.

Due to this redesign and our teacher interventions, Discovery saw a 529.03% increase in handwashing at lunch from March 2016 to January 2017, from 62 observed handwashing events during a single typical lunch session to 390 observed handwashing events.

Members of our Health & Wellness Committee observe student habits frequently and provide feedback to the administration. Dr. Russo has appeared on the daily television broadcast to encourage student helpers, such as our Wonder Wiper roles, to clean tables carefully, using one bucket for rectangular tables, and one for round tables, which are our nut-free tables, to ensure no cross-contamination, and these students are instructed to wash their hands on either side of that job. Discovery students also follow the 2015 Health Education Standards of Learning for Virginia Public Schools. In collaboration with the School Health Nurse, teachers instruct in students proper teeth and gum care, proper modes of handwashing, appropriate ways to handle sneezing and coughing, protection against the harmful effects of the sun, and methods for preventing the spread of infection. Older students are instructed by teachers and parents in hat-wearing and proper UV protection; our PTA is currently investigating how to incorporate more shaded areas into our playground designs. We track illness, clinic visit, and student absence data and when an elevated level of student sickness is observed - such as influenza or norovirus - the school responds with notifications and the implementation of the appropriate health plan, raising awareness for students, families, and faculty alike, to further enhance our hygiene response. Arlington Public Schools provides free influenza vaccination to all families that need it, regardless of socioeconomic status.

Each month, Discovery staff members participate in a monthly Step Challenge to promote the use of their devices to ensure active, non-sedentary lifestyles for adults. Monthly recipe challenges invite staff to bring healthy, nutritious meals to share, and then provide the recipe so families can eat better at home. We hold an annual Biggest Loser challenge to jump-start obesity-combatting efforts as well.

No food is shared at Discovery. The administrative team promises Discovery parents that the only food that their children will come in contact with is the food they send with their children or the food they allow their children to buy in the Dining Commons. Food is not a part of classroom celebrations, drastically cutting down on the amount of cupcakes and other unhealthy items students at other schools are exposed to. For birthday celebrations we ask parents to come read and donate a book to the classroom library with a Happy Birthday inscription. This way classroom libraries grow by at least 25 books a year. Teachers also encourage healthy snack choices and lunch choices.

Discovery has a robust school garden program and strong ties to local farms. By gathering materials and advice from farmers at Goat Hill Farm, parents, staff and students prepared raised beds and planted herbs and vegetables the first spring that the school operated. The Eco Action team planted the 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 also established itself as the pick-up location for the Potomac Vegetable Farm's Community-Supported Agriculture program in 2016, and dozens of Discovery families participated.

Discovery's Eco Action team, comprised of students at all grade levels, staff, and parents, carries out a variety of programs to reduce waste and raise awareness of environmental issues on a daily basis. These programs include reducing lunchroom waste through a variety of programs (see below) and tracking weekly trash weight; creating short videos on environmental topics, especially waste reduction and recycling, for the school's morning announcements; promoting, through posters and videos, a holiday drive to donate gently used toys and clothing to an

assistance center; promoting, through posters and videos, an annual collection of small electronics for recycling and reuse; planting and tending herbs and vegetables in the school garden, for use at lunch; creating collection bins placed in classrooms and other key locations (by copiers) for paper that was used on one side, for use by Extended Day for art projects; creating an Eco Code that encourages all students to reduce waste and conserve resources; and placing large recycling bins in hallways in the last days of school, to divert waste from the landfill

Starting from the first months after the school opened, Discovery has participated in a regional program called The Food Bus. Through this program, Discovery delivers unused student food to the local food assistance center. Through demonstrations, signs, and videos, students encourage their fellow students to put uneaten food (that would normally end up in the trash) in the Food Bus bins. Each day, students empty the bins into a designated refrigerator. At the end of each week, a student and his/her family delivers to the food assistance center between 75 and 100 pounds of food that would have gone to the landfill.

Discovery also reduces lunch waste by promoting trash-free lunches, and by teaching children to recycle (and donate to the Food Bus, above) in the classroom and at lunch. At the beginning of each year, parents and staff teach children what can be recycled and how to do it (e.g., dump extra milk before recycling the carton). Each class has an assigned Responsible Recycler role to ensure recycling habits are maintained during lunch clean-up. Throughout the year, student-produced videos remind students of these procedures. Through communications with the PTA and with students, Eco Action parents show parents and students how they can pack lunches that do not generate waste or recycling. Discovery can gauge the effectiveness of these programs by weighing lunch waste and tracking it. Cafeteria staff support and reinforce these actions on a daily basis.

Discovery students are taught to recognize the irrevocable link between caring for the environment and caring for each other. Keeping food waste out of trash cans doesn't just translate to lessening refuse mass in landfills; it can help put essential nourishment in the hands and mouths of our neighbors. With one in six families living in a state of food insecurity nationwide, our school community feels a deep ethical responsibility to help, and so we directly teach our students how to properly place uneaten food into designated containers, instead of the trash, which is then donated to the Food Bus and the Arlington Food Assistance Center, or AFAC. AFAC serves over two thousand area families weekly, and 35% of their consumers are children. Discovery kids want to help other kids, and so diligently engage in these sustainable processes that help our neighbors in need.

Students, families, and staff are encouraged to engage in sustainable transportation practices. We have provided five extra car pool parking spots. Discovery also provides free charging stations for electric or hybrid cars. Discovery has a bike storage room with a shower for staff to use. Students collect data on sustainable transportation for the Energy Dashboard by counting cars and bus ridership daily. Discovery celebrates two big Bike and Walk to School Day yearly. Thirty-eight bike racks are available to Explorers of all ages.

Student movement is encouraged by school administration and teachers. Teachers are encouraged to take "brain breaks" with students frequently. Brain breaks can include a ride down the indoor slide, a walk outside, dance, or a variety of movement routines and games. Teachers are offered professional development on ways to increase students movement. Staff are

encouraged to eat healthy by monthly recipe challenges. In addition, the staff engage in friendly competitions such as The Biggest Loser and Step Challenges. Staff meetings and celebrations only include healthy food items and vegan options for inclusiveness.

Mental health and wellness is an aspect of student health too often overlooked in school health programs. Discovery is deeply committed to the research-based *Responsive Classroom* model of social and emotional learning. We professionally develop our staff extensively and consistently in this model, and employ its principles both in our daily learning environments and practices as well as in cocurricular and extracurricular settings. Eliminating punishment-based consequence mindsets, promoting healthy and prosocial inter-student engagement, perceiving each child as an individual and seeking to understand them meaningfully and cognitively, and building strong, communicative, collaborative relationships with family stakeholders are just a few of the critical aspects of Discovery's approach. Our most recent school-wide assembly - held the morning after the Presidential Election - had students of all ages, Pre-Kindergarten through Fifth Grade, create individual links of a chain expressing students' individual perceptions of Kindness, from which we encircled the entire student body in a circle to bring us together and show our unity with one another. The professional educators and extensive support staff at Discovery take the care, emotional well-being, and psycho-emotional health of children very seriously, and we universally consider social and emotional learning when selecting programs, designing initiatives, and conversing about our practices.

### 2C. Other Innovative Health and Wellness Efforts & Programs

Our Health and Wellness Committee actively promotes a variety of health and wellness initiatives. Frequently parents come to school to collect data on student hand washing, the amount of time children have to eat lunch, and the amount of time children are outside for unstructured play. The committee then reports data to the school administrative team and together they problem solve.

## Goal Area 3
### Effective Environmental and Sustainability Education

### 3A. Shared Responsibility for Cross-Curricular Environmental Learning

Building a sustainable *facility* does not alone build a sustainable *school*. Our student citizens actively learn how to be stewards of their environments, as well as learn the skills they need to be successful in the future. A robust team of educational support professionals, including administrators, technologists, and content coaches, work directly with students and teachers to ensure that authentic contexts, consistent with our Eco-Action values, are infused into learning. For example, instead of calculating variables in a vacuum while learning the distributive property, we use actual data from our school and multiply pounds of recycling or quantify the number of kilowatt-hours we are generating. While it's simple to shift a focus from a vacuum to a sustainable mindset, it is this constant infusion that helps us maintain awareness of our larger responsibilities, and generates a consistent interest in exploring ways to improve these observable and concrete outcomes that benefit our community and our world.

Discovery teachers have taken active leadership with the Assistant Superintendent for Instruction in investigating curated digital resources, such as as apps on iPads and digital resources on MacBook Airs and iPads, to replace traditional textbooks, thereby massively reducing the amount of paper utilized and pushing publishers to shift their focus from consumable modalities of delivery to sustainable digital content. At Discovery, students and teachers use their personal devices (e.g., iPads and MacBook Airs ) to actively engage in the teaching and learning process, as well as assessment practices. For example, Discovery students use online math and literacy resources at school and at home to develop skill mastery in areas of math fact fluency, as well as reading decoding, fluency, and comprehension. As another example, Discovery students access an extensive collection of ebooks and audiobooks, as well as online resources and databases, to investigate various topics related to environmental learning. These examples support the notion that Discovery actively seeks to utilize dynamic digital content for instruction and assessment, eliminating waste and providing more relevant performance data in the same stroke. This year, Discovery has a Sustainability Coordinator position, working with a committee of parents and students help improve our green school practices. This Coordinator and committee will directly support the initiatives of the APS Sustainability and Outdoor Learning Program (SOLP), a county-wide program that seeks to address the Governor of the Commonwealth of Virginia's Environmental Literacy Challenge.

Our teachers meet in Collaborative Learning Teams three times a week, and as a whole faculty twice a month. During these meetings, teachers not only learn from each other, but also from instructional coaches, the leadership team, central office specialists, and professional staff developers, to hone their pedagogical skills and reinforce their understanding of how to infuse Eco-Action and sustainability practices into student learning. Moreover, Discovery teachers and administrators attend and present at professional conferences that aim to grow the understanding of and guide the implementation of best practices in learning, teaching, assessing, and managing school buildings consistent with Discovery's environmental stewardship. For example, principal Erin Russo and lead architect Wyck Knox presented at LearningSCAPES, the annual conference of the Association for Learning Environments, in which they highlighted zero-energy strategies for energy conservation, sustainable ecologies, project-based learning opportunities, and how data can drive design and operations decisions, including the limitations of predictive modeling versus energy benchmarking.

Being a green school, Discovery celebrated its first Earth Day in 2016 by allowing each grade team to design and implement a project of its own choosing. Kindergarten, for example created window boxes for its playground, while third grade picked up trash in a local park. Meanwhile, fourth grade create a line of upcycled clothing.

## 3B. Environmental & Sustainability Content in STEM

As an authentic context in and of itself, Discovery's building, structures, grounds, environmental and sustainability systems, design, layout, wayfinding aspects, instructional signage, and furnishings are all hands-on learning tools. Consequently, our science, technology, engineering, and mathematics content is quite literally situated within an "environmental learning environment," designed with sustainability in mind.

When instructing, for example, science pertaining to the sun and its light and heat, classes step out into the Solar Lab to safely observe the sun and its path, and can control solar panels and water heating systems to see the changes in our energy output in realtime, using our energy dashboard. When the Autumnal Equinox occurred, our students were able to observe in real time the path of the sun through our oculus on the Solar Plaza out front, and calculate time, observe and investigate geometry, conceptualize the relationship between the earth and the sun, and more. In studying weathering, erosion and deposition, the school's bioretention areas provide students with a meaningful way of visualizing and quantifying storm runoff, as well as understanding what impact it can have within the Chesapeake Bay watershed if left unmitigated. The school's plantings, most notably its high-profile butterfly garden, highlight for students the mutual dependence shared by flowering plants and various pollinators. Indeed, all grade levels can access age-appropriate authentic content by attending school here, and our teachers take this ability, and their charge to use all of it, seriously.

We have begun developing a Discovery-specific Meaningful Watershed Educational Experience in the form of our Fifth Grade authentic research project pertaining to the on-campus bioswales and retaining ponds. At Discovery, we have four retaining ponds that hold and filter water prior to its travel out to water systems that lead (often directly) to the Chesapeake Bay, given our proximity to waterways. Students engaged in an ongoing cross-curricular project - focusing primarily on Science and ELA with some Mathematics instruction - to create a reporting product that shares information with the student body, parents, and visitors. This project meaningfully and immersively situated students in research and experience pertaining to the flow of water directly from our school to the Potomac. This authentic experience covered both all four points of the MWEE recommendations for student experience and all four points for teacher support and instructional design.

## 3C. Development & Application of Civic Knowledge and Skills

Located in Fauquier County, about a 40-minute bus ride from Arlington County, the Phoebe Hall Knipling Outdoor Lab is a 225-acre natural preserve operated by the Arlington Outdoor Education Association. AOEA, formed in 1967, has been a staple of outdoor experiential learning for our schools for the past fifty years, and Discovery students and staff have availed themselves extensively of the robust opportunities afforded by the Outdoor Lab: streams, natural springs, natural hiking trails, flora and fauna identification and observation areas, camping sites, an outdoor learning classroom, a kitchen, and a 10-inch reflecting telescope in the sky observatory for astronomy studies. The near-urban setting of Discovery Elementary School affords proximity to a number of profound civic opportunities - the Newseum, the Smithsonian, the National Gallery, and more - but connecting these civic institutions to nature and the larger world is a challenge for many suburban academic communities. By actively partnering with the AOEA, Discovery ensures that our students experience nature authentically, and spend the time among our fellow living creatures and in natural rural and wild environments that is essential to the development of global citizenship and the active mindset of a natural custodian.

These natural phenomena are replicated in a smaller scale through the extensive planting of indigenous and endemic plant-life throughout the Discovery campus. Our bioswales provide not only critical physical advantages in terms of runoff filtration and environmental health, but a rich opportunity to observe some of the experiences of the Outdoor Lab in our own backyard.

Our school itself is an experiential learning environment, affording students these opportunities to experience their world and the world's place in the larger solar system and galaxy. Indeed, our wayfinding-based school design mirrors this system of ever-expanding inquiry: Kindergarteners begin their experience in the *Backyard*, represented by a birdhouse. First graders expand beyond the Backyard to the *Forest*, which is adorned with natural Virginia woods and scale representations of Virginia wildlife, all keyed to explanatory placards. Second graders swim in the *Ocean* of learning, located near one of our "Fishbowl" collaborative spaces, and gain access to movable-wall classrooms that can open to create collaborative schools of our young learning fish. Third graders move to the second floor, and literally up into the *Atmosphere*, where the blue sky painted areas and natural skylights also feature scale silhouettes of Virginia avian wildlife. Our Blue Sky Studio and Cloud Commons areas provide clear sight to the wide outside world. Fourth graders expand their inquiry even further, beyond Earth to the *Solar System*, as they delve deeply into curricular content that explores the natural and physical laws of their larger worlds. Fifth graders go even further beyond the *Solar System* into the *Galaxy*, the widest scope of inquiry and exploration at Discovery. Located directly next to the outdoor Solar Lab, students can step out into the world and see into space, as well as harness its power with student-controlled solar cells. Crossing the entirety of our various scopes of inquiry, Discovery takes seriously translating these civic, natural, and cultural concepts into tangible, developmentally-appropriate actions.


As an example, our fifth grade research unit has students choose one sustainable feature of Discovery and complete an independent research project. Students use their knowledge in an authentic way by acting as ambassadors to Discovery. These fifth graders give tours to visitors on their chosen element, and utilize their research and public speaking skills, which are part of the state English Language Arts standards. In December 2016, students will use these skills to offer tours to the U.S. Department of Energy, as they come to Discovery as their exemplar net-zero energy school to kick off their Net-Zero Schools Accelerator initiative.

Discovery was the 2016 Focus School for Arlington Public Schools during the annual International Bike & Walk to Work Day. Locally sponsored by Arlington Transportation Partners, students, staff, and families participated school-wide to slash carbon emissions and use their feet and foot-powered wheels to come together as a community. Our local fire department, Arlington County Fire Department Engine Company 6, and members of our local police department, Arlington County Police Department officers Detective _ and Lieutenant Noack, were on hand to participate and support our efforts, working with students and helping us to create our school's "Big D" on our geothermal field.

On September 22, 2016 - the Autumnal Equinox - students across grade levels were able to experience the transit of the light of the sun through the oculus on our Solar Plaza, which is a built-in solar calendar and clock. (A time-lapse of this event is available at

https://vimeo.com/183936022.) This was a direct result of our 2015 equinox experience, in which Discovery partnered with VMDO as part of the Green Apple Day of Service sponsored by the Center for Green Schools of the USGBC, in which we marked the locations of the markers on the open space that later became the plaza's calendar and clock. In this way, it's literally accurate to say that students designed and built the very plaza that yielded the second year equinox experience.

During Discovery's first year, the Fifth Grade team carved out a weekly "Genius Hour" in which students could pursue a project of their choosing. Students began by identifying a problem, and then brainstormed solutions. Students then spent their weekly allotted time on executing their solution. Projects included a plan to save endangered tortoises; a book drive to benefit local needy families; and a novel way of using dried, braided grasses to produce eco-friendly fabrics.Also in the first year, the Fifth Grade team participated in the pilot EcoRise Sustainable Intelligence program. The program aims to educate and inspire the next generation of "green" leaders. It includes both professional development and curriculum materials. The curriculum has an overall focus on sustainability, and introduces students to environmental literacy, social innovation and hands-on design skills. At Discovery, students completed multiple program activities, including quantifying and comparing the school's low-flow faucets with their own (largely traditional) faucets at home. The exercise allowed students to calculate the savings, both in thousands of gallons and in dollars, made possible by the school's low-flow fixtures.

Discovery serves not only as an incubator and accelerator for our students, but also for local, national, and international partners. The Lion Bus *eLion* is the only Type C electric school bus in North America. An aerodynamic, lightweight, safe, and powerful vehicle matching any diesel bus, the *eLion* was an exciting visitor when one of the prototypes came to Discovery in Fall 2016. Students, staff, and regional transportation partners came to sit on and ride the bus, learning about green transportation and both the environmental and long-term municipal cost-saving advantages to such a shift.

C.A.R.E.S. is our social and emotional learning program at Discovery, which stands for Cooperation, Assertion, Responsibility, Empathy, and Self-Control. Through explicit learning in C.A.R.E.S. and the advocacy of our Eco-Action Team, students display increased consideration for their environment and for each other, marrying the twin goals of environmental responsibility and interpersonal responsibility. Students pass on bracelets to peers when they observe peers displaying one of the aspects of C.A.R.E.S. We celebrate these characteristics at school wide assemblies. Recently, at our Kindness Assembly, students wrote what kindness means to them on orange strips of paper which we linked into one school wide chain, which we held aloft surrounding the student body. The entire school proclaimed, in one unified voice, that "We Choose Kindness." Student descriptions of kindness included things like "recycling," "water conservation," and "helping a friend pack a trashless lunch."

Teachers use our extensive environmental signage package 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 examples, students in the *Forest* Hallway study among—and know—the six most common trees in Virginia. In the *Galaxy* Hallway, students are well versed in the basic structure of the cosmos. And in the *Atmosphere* Hallway, students can identify the various types of precipitation. In addition, these teaching tools foster a love of, and appreciation for, our natural environment.

Given that Discovery is an innovative and newly-opened school, our quantifiable data efforts at this time primarily focus upon establishment of baselines: trash and recycling weight, daily ridership data, assessment data pertaining to environmentally-related standards in the Virginia curriculum, student survey responses, and more. As an example, we utilized PowerSchool preassessment Beginning of Year (BOY) data to establish an average Grade 5 baseline of 58.775% mastery of the Virginia Science Standards of Learning, which include the strands of living systems; interrelationships in Earth/space Systems; Earth patterns, cycles, and change; and Earth resources. After a quarter of learning and growth, our Quarter 1 data saw an average 47.64% increase to an average 86.775% mastery for the same group. When including Grade 4 students, we saw an overall school-wide Science mastery increase of 39.19% over the first quarter. We continue to compile and analyze such data for future comparison, to ensure that we are making demonstrable, quantifiable advances in our priorities, ensuring that every student's education at Discovery meaningfully integrates the environmental stewardship that will be essential for their future, and the future of our local community, our national economy, and the health and longevity of our ecosystems and our planet.