



2015-2016 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 2015-2016

Public Charter Title I Magnet Private Independent Rural

Name of Principal: Ms. Charlotte Riggs

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

Official School Name: St. Stephen's & St. Agnes Middle School

(As it should appear on an award)

Official School Name Mailing Address: 4401 West Braddock Road

(If address is P.O. Box, also include street address.)

County: Alexandria State Virginia School Code Number *: N/A

Telephone: (703) 212-2912 Fax: N/A

Web site/URL: www.sssas.org E-mail: bkane@sssas.org

**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 25, 2016

(Principal's Signature)

Name of Superintendent: Head of School: Ms. Kirsten Prettyman Adams

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)



District Name: n/a

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

Kurt Adams

Date: January 25, 2016

(Superintendent's Signature) (Head of School'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 R. 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.

Dr. Steven R. Staples

Date:

(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 ed.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.

Highlights Report: St. Stephen's & St. Agnes Middle School

St. Stephen's & St. Agnes (SSSAS) Middle School embodies a culture of environmental stewardship. As one of three campuses of a JK-12 Episcopal Church school in Alexandria, Virginia, the middle school is in its ninth year of sustainable focus and practices. The school's guiding philosophy states, "Our mission is to pursue goodness as well as knowledge and to honor the unique value of each of our members as a child of God in a caring community." The middle school's 304 students gain knowledge of the interdependent pieces of sustainability, live and learn in a healthy and collaborative environment, and are actively called to take a global view of sustainability through exposure and understanding of communities affected by environmental challenges.

The SSSAS administration and staff has worked for nearly a decade to create more efficient building systems, to optimize transportation routes, and to reduce solid waste through recycling, improved purchasing, and improved communication. Over eight years, the middle school has addressed energy efficiency in a focused series of building performance projects, which has led to a 41% reduction in annual electricity consumption. The recent comprehensive retrofit of light fixtures and a total roof re-insulation project with a white surface to reduce heat absorption are expected to continue reductions in energy use. A 2014-15 Energy Star rating of 64 shows that there is yet room for improvement, but also marks significant improvement since embarking on energy conservation work in 2007, when the Energy Star rating was 8. Many school systems have reduced waste including printing, mailing, and communication methods.

Other notable reductions include the school bus fleet's fuel consumption, which has been reduced by 42% and the student vehicle miles traveled has been reduced by 7%. The diversion rate of waste has increased 21% since 2007. Water conservation measures have decreased the water use by 28% since the 2010-11 year. Trayless dining and washable dishware have contributed to the decreased volume of solid waste and water, as well.

The sustainability curriculum permeates history, science, religion, mathematics, and art. Students compare renewable energy sources to traditional energy sources in laboratory experiments with wind and solar energy, they harness technology to model life in environmentally friendly cities, and they conduct horticultural experiments in the school's greenhouse. Students research the effects of past environmental disasters, as well as the harm to natural resources and populations in procuring and manufacturing for developed nations. Students sequentially learn the biological and cultural systems related to the Chesapeake Bay, a primary focal point in the three grades. Regular excursions and overnight trips to the Bay and its tributaries place the students within some pristine as well as some contaminated areas of the watershed, in order for students to gain a comprehensive perspective on a large environmental issue that affects natural, economic, and cultural systems.

The middle school faculty continues to seek ways to challenge students to understand the need for responsible behaviors related to care of the planet. To heighten student awareness of energy saving measures and to stay vigilant in the quest to decrease carbon emissions, a [real-time energy dashboard](#) is available online and in the hallways. It reports daily, weekly, and monthly progress of energy consumption. Through the advancement of regional environmental literacy, and the

experience of hands-on sustainable solutions, SSSAS students gain a heightened awareness of the challenges that will define their futures.

The health of the student body and faculty is primary to the culture of the SSSAS middle school. Building mechanical systems are cleaned and inspected regularly for optimal performance. Integrated pest management is utilized, and stormwater from parking lots and walkways is managed through bioretention. A thoughtful physical education program allows students five hours each week of sports and recreational activities and which include proper conditioning, balanced nutrition, and good sportsmanship. Over 40% of the faculty is engaged with the students as coaches and leaders of outdoor excursions. Moral and ethical character development is equally important, as the school's Honor Code invites each student and faculty member to be reminded of their key role within a respectful and honorable community. Discussion and counseling groups are positioned to maintain healthy student mindsets, as well.

The school's Director of Environmental Stewardship coordinates long- and short-term sustainability pursuits with faculty, administrators, dining, transportation and facilities staff who comprise the 23-member Environmental Stewardship Committee. The Director advises on strategic plan initiatives, capital improvements, and community-based initiatives, as well as family education at parent-teacher association speaking events. The Environmental Stewardship Committee runs the annual [Students for Sustainability](#) Conference, which brings regional schools together for a day of environmental education and camaraderie. Field trips and outdoor learning opportunities take students to settings that inspire and that serve as the basis for place-based learning.

The middle school makes explicit expectations for responsible habits and emphasizes a sustainability perspective in all facets of school life. It also seeks to broaden the school community's view of sustainability as a global issue when it examines the needs of other communities challenged and affected by practices that threaten a sustainable lifestyle.

Goal Area 1: Reducing Environmental Impacts and Costs

In 2007, St. Stephen's & St. Agnes School (SSSAS) underwent a school-wide sustainability audit that examined every facet of operations and facilities at the school's three campuses, and studied its eight buildings and five residences on its non-contiguous 54 acres. The audit analyzed energy, transportation, waste, procurement, landscape, grounds, community, and the school culture. The audit resulted in a series of recommendations to assist the school in reducing its environmental impact and also to enable SSSAS to model sustainable practices.

The audit concluded that the school's primary sources of carbon emissions and greenhouse gases were from its energy use and its transportation systems. SSSAS identified projects to address the energy conservation and transportation issues, largely using the resources of its in-house staff. It also examined its purchasing policies and practices to aid in the reduction of the school's carbon footprint. The middle school began a series of energy conservation projects that by June 2014 yielded an energy reduction of 41 percent from the 2007 baseline, bringing down the total megawatt hours from 1,281 recorded in 2007 to 859 in 2014. School-wide, the total carbon emissions have been reduced by 37%, with the annual greenhouse gas emissions reduced by 242 metric tons of CO₂e.

Energy conservation measures were primary factors in this successful reduction, and these measures included two high efficiency heating and air conditioning unit installations, comprehensive roof insulation and white surface treatment, improved window and door insulation, and aggressive coil and filter replacement on heating and air conditioning units. High efficiency dishwashers were installed in the kitchen and energy-efficient heating and air conditioning units were installed in 2012.

Having achieved this reduction, the school sought focused direction for further improvement, and in 2014 completed an ASHRAE-Type II audit of its three campuses to guide the movement forward with projects that likely would require more capital investment. The audit provided an Energy Management Plan for the school that recommended a lighting retrofit across all campuses as a priority project to achieve substantive energy savings with a short return on investment. In 2015, high efficiency T8 bulbs were installed to replace the T12 lighting in all rooms and corridors of the school. Occupancy light sensors were installed in all common areas such as conference rooms and faculty rest rooms. All exterior lighting was retrofitted to induction lamps. The outcome has already proven successful in a reduction of 7.4% in the kilowatt hours compared a four-week period the prior year and 8.6% reduction from the average of the four prior periods. The middle school is optimistic that the retrofit will bring further reductions of energy and additional cost savings above the \$258,272 (adjusted for weather and price changes) already realized at the school.

To raise students' awareness of the energy improvements, in 2014 the middle school installed an [energy dashboard](#) of the school's daily progress in its kilowatt-hour consumption. As the monitor of the middle school's progress, a polar bear is displayed in various states of joy or frustration, based on the day's readings, and students monitor the bear's attitude. A [desktop version](#) is available to the school community with links from the [SSSAS.org](#) website, a widely used resource. Each of the campus dashboards share kilowatt-hour consumption and compare usage to a previous

time period in a vibrant visual display. Teachers and students use the data for math and science problems, as discussed further in “Goal Area 3” below.

The school monitors its ongoing progress aided by Energy Star Portfolio Manager and achieved a rating of 64, a marked improvement from its initial score of 8 in 2007. The school continues to strive to achieve the desired Energy Star score of 75 by gradually implementing a series of energy conservation projects over the next three to five years. In addition, the school installed solar hot water heaters in 2009, which provide 75% of the total hot water required for the rest rooms and kitchen at the middle school. Water conservation measures installed since 2011, such as sensors on hand sinks and low-flush toilets have resulted in a 28 percent reduction in water consumption in the 2014-2015 school below the peak year 2010-11.

SSSAS has been recognized for its electricity reduction and has received several awards in the Green Cup Energy Challenge, a national energy reduction competition in which schools compete to reduce electricity consumption in a four-week period. The middle school ranked first place in 2008, and second place in 2012. The awards show extra effort by the school to reduce its already significant kilowatt-hour reduction since 2007 and the annual competition promotes a high level of student and faculty engagement (as well as healthy competition between the three campuses!)

Stormwater in the school’s main driveway and parking lot is managed with a bioretention area that captures approximately 50% of impervious surface runoff and allows it to percolate before entering the storm drains to Four Mile Run, the school’s watershed and a tributary of the Potomac River that runs to the Chesapeake Bay. Watershed awareness is part of the school’s ongoing efforts to be stewards of the Chesapeake Bay, a curricular focus area, and is included in the service learning through annual local waterway clean-up events.

Waste, Reuse, and Recycling

The middle school’s waste diversion rate of 31% is an improvement from the baseline of 11% in 2006-07 and aims to equal or exceed the adjacent Alexandria city rate of 48% for households. The improved rate resulted from the introduction of a universal system of waste and recycling containers clearly marked for either “Landfill” or for “Mixed Recyclables.” An educational campaign among students and faculty included a school wide assembly in which student environmental leaders demonstrated the proper sorting of recyclables. Homeroom teachers explain the list of acceptable materials for recycling students sign the “Green Saints Pledge” at the outset of the school year. Trayless dining in the dining halls since 2012 has reduced food waste and encouraged healthful portions. All dishes and flatware in the dining hall are washable, and the food service provides only recyclable cups for beverages, which are served from dispensers. The school uses the Chemsearch Bio-Amp™ to treat wastewater. (Bio-Amp produces 30 trillion live bacteria into the wastewater daily to eliminate clogging and the need for harmful chemicals).

Students compost a limited amount from lunch for use in the in-house composter. A 2013 waste stream audit indicated that 37% of the middle school waste is compostable, largely related to production and some from the dining hall floor. To address this, in April 2016, the school will embark on a composting program with a local certified composting service.

Maintenance staff installed three rapid water bottle filling stations in 2013 to discourage disposable bottle water use. A homeroom class transfers paper and cardboard from the classroom, library and common areas weekly to the school's central recycling dumpster. This responsibility rotates with every middle school student participating twice annually to see first-hand the amount of school material that is recyclable.

Expired light bulbs and lamps are collected and packed for shipment by the school's maintenance staff and are responsibly recycled with ESI, the school's waste and recycling contractor to ensure that this hazardous waste is diverted from local landfills. Hazardous material buckets for staff and faculty use are in the maintenance shop to deposit light bulbs and other hazardous materials.

Electronics recycling occurs to minimize the school's purchasing impact on the environment, as technology increasingly has become part of school's essential teaching tools. Internal items are collected quarterly at the school's computer lab and are sent to Service Source, a certified responsible recycling company, which processes all electronics to meet e-Steward and R-2 standards for electronic recycling. In addition, the school hosts an e-cycling community event each April. Parent volunteers assist as area residents bring monitors, printers, desktops and laptops to the event. This popular event brought 5,977 pounds of electronics to the SSSAS campus last April for responsible electronic recycling through Service Source.

Transportation and Commuting

After the 2007 audit, the middle school identified its commuting of faculty and students as the second leading cause of greenhouse gas emissions. As a result, numerous measures were undertaken to curb the school's transportation emissions, with initiatives that range from more access to carpools to a rerouting of school bus routes.

The school introduced a prominent feature on its parents' website called "Commuting Easy Clean and Green," which provides intra-campus shuttle bus schedules and locations so that families can reduce the total vehicle miles traveled between campuses, as families often have students enrolled at multiple campus locations (the campuses are within two miles of each other, but in a congested district in Alexandria). The website includes a search-by-zip code directory, which allows families to find carpool partners within their neighborhood. As students travel as far as 25 miles each way to the middle school, this service has reduced the total vehicle miles traveled. The total vehicle miles traveled for cars have decreased by 7% since 2007, and the total fuel quantity consumption has been reduced by 26%. SSSAS has decreased the school-wide vehicle miles traveled in all forms of transportation by 36%, and fuel consumption by 42%, due largely to a reorganization of school bus stops combined with a marked increase in school bus ridership since 2008. The percentage of families that carpool to and from the middle school ranges year to year, based on the zip code location of the incoming students. This number has ranged from 25% in 2013 to as high as 63% in 2007.

The school has a No Idling policy for school buses and maintenance vehicles. Parents who drive their children to school are asked to refrain from idling in carpool lanes when waiting for more than 30 seconds. Reminder placards are posted twice yearly in carpool lanes, and the parent manual states this policy, as well. The No Idling message is also re-introduced each Environmental Awareness Week when “No Idling, Young Lungs at Work” signs are posted and parent volunteers distribute cards which include the EPA’s recommendations on idling for vehicles.

Bike racks and a continuous sidewalk to adjacent roadways permit safe pedestrian access to school, located along a busy artery in the city of Alexandria. Several students and faculty walk and bike to school daily at the middle school, although the lower school campus boasts the highest number of cyclists, as it is located in the heart of a residential district with strong connectivity through continuous sidewalks and crosswalks.

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

St. Stephen's & St. Agnes Middle School takes seriously the physical, emotional, and academic development of each of its 304 students. The school's curricular structure and its community's ethical and moral standards ensure that the school environment is one that gives rise to a healthful and well-rounded adolescent who understands his/her place within a greater community. Sixty staff and faculty members also partake in the healthful habits of their students as coaches, teachers, and wellness mentors to students, and create a school atmosphere that is based on positive character traits, as well as adherence to the Honor Code.

All activities occur in a facility that is maintained and improved in a manner that is healthful and good for the environment. In a typical school day, SSSAS students are provided with multiple opportunities for outdoor education and fresh air, as well as learning and living in a healthful building with excellent maintenance practices.

The Healthy (and Fit) Student

SSSAS encourages the development of a child who is both mentally and physically capable, and believes that the two are closely linked. Its middle school physical education is distinct from many other schools in that its students participate in daily physical education classes and sports programs. In sixth grade, students are exposed to a wide-range of physical activities that includes fitness and conditioning, soccer, field hockey, lacrosse, track, volleyball and basketball. In seventh and eighth grade, boys and girls may choose from several categories of sports in each season, including cross country, soccer, football, volleyball and tennis (fall); swimming, track, wrestling, fitness, yoga and dance (winter); baseball, softball, lacrosse, tennis and track (spring). Each child participates in sports for 45 minutes daily and each team competes once weekly in an after school match or meet with regional schools.

The sequence of practices and games strives to make the child adept at a range of sports. By the time students complete the eighth grade, they are confident athletes in a sport that was perhaps new to them in sixth grade. In addition, sportsmanship and team building occur as they compete against regional schools and learn the highs and lows of victory and defeat. Each year, a male and a female student at each grade level are honored at the awards assembly for combined athleticism and sportsmanship.

Sport instruction includes lessons in proper stretching prior to athletic events, as well as proper use of strength conditioning equipment so that students avoid injury. Each seventh and eighth grade student at the middle school receives a baseline concussion test before they begin the sports programs, as well. One of the school's three full-time athletic trainers works specifically with the middle school students should injury occur.

Forty percent of the middle school faculty participates as a coach in the schools' sports programs, which enables exercise and fitness to be included in their workday. Several teachers lead yoga practice for staff members after school and faculty participate in pedometer challenges throughout the academic year at the middle school.

The school has a full-time licensed registered nurse on staff with a one-bed sick room at the middle school. The nurse also trains faculty and staff in the administration of medication. The nurse makes sunscreen available daily for all outdoor activities. The school-wide Health and Wellness committee includes a full-time wellness teacher, as well as a health and human sexuality educator available to all K-12 grade levels. She also chairs "Saints for Wellness," comprised of 15 staff and faculty, and sponsors fund-raising health related events for charities across all school divisions. The group also creates "public service announcements" which are aired at school assemblies.

The Student of Sound Mind and Character

The middle school is served by a comprehensive "advisory" program, in which each student belongs to a cohort of ten students and one faculty member. The advisory serves as an emotional "home base." The advisor is a point of contact between the student and parents regarding the child's academic and emotional well-being. A full time school counselor offers sessions at lunch with students, as "check-ins" to hear concerns and the counselor is available to all staff, faculty, and families as a resource. Informal lunch sessions occur in the school's UC² (Unite and Courageous Conversations) club, which focuses on issues of diversity and inclusion (28% of the children in the school are students of color, with 18% of the enrollment receiving need based financial aid). Each of the school's three campus counselors is fully available for personal use by SSSAS faculty and staff, as well.

Each middle school student is instructed in the St. Stephen's & St. Agnes Honor Code at the start of each year when each student publicly signs the Code, which describes the conduct expected with regard to honesty and community ethics. The dean of students and school counselor engage a school-wide "character committee" in which best character attributes are discussed, such as "standing up for self," and "standing up for others," even when it is difficult and not popular among one's peers. The students also sign the "Green Saints Pledge," in which students vow to conserve natural resources and contribute to sustainability at the middle school.

Learning in a Healthy Building

The 74,447 square foot middle school building was renovated in 1990 when it was acquired by SSSAS from a school that was closing. Renovations included a substantial building addition, and the installation of operable insulated windows and new doors in all portions of the building. In 2007, SSSAS initiated its sustainability program, and the building and school operations were audited and the school embarked on tracking its electricity use through Energy Star Portfolio

Manager. It has undertaken nine years of facilities improvements to ensure a healthy and energy-wise facility (specific measures are described in Part 1 above).

Regularly scheduled maintenance practices keep the building efficient and healthy. Rooftop HVAC units' coils are cleaned annually and filters are changed quarterly. One wing with internal wall units has quarterly coil cleaning and annual filter changes. Inspections occur on all air handlers and water heaters monthly by one of the two full-time maintenance personnel. Drinking water fountains and water dispensers are equipped with filters to remove any potential lead and contaminants. These are also changed on a regular cycle.

Integrated pest management (IPM) keeps the buildings healthy and free of pests and these processes include the regular sealing of doors and windows, setting bait control stations for ants and rodents, and using biological controls for keeping kitchen drains unclogged.

In May 2015, the school's ventilation system was tested and then sealed for leakage. Vents were sealed with UL181 low VOC mastic, UL181 foil duct tape and measurements taken using a duct blaster and monometer. These actions reduced air leakage below 15%.

All housekeeping products are Green Seal certified and vacuum cleaners contain HEPA filters. All tiled surfaces are mopped daily. Sixth, seventh, and eighth grade science laboratories do not engage in the use of harmful chemicals in lab experiments. The middle school art curriculum includes several ceramic units, and kiln firing occurs in ventilated rooms designed for ceramic firing with appropriate hoods and ventilation fans. Kitchen hood vents are cleaned semi-annually by a professional contractor.

Recent renovations at the middle school include a refurbished library interior that uses high efficiency T8 lights, rearranged shelving, and window treatments to allow increased natural light. New carpeting with non-VOC emitting adhesives, as well as non VOC-fuming paints were also part of the library renovation. The teacher lounge, as well, was refurbished with similar finishes and features to create a more healthful setting for faculty meetings and gatherings.

The grounds include a school greenhouse and terrace, where students gather for classroom instruction, as well as an outdoor classroom. A tree grove is another gathering area for recess and lunchtime where native shade trees grow and are replanted yearly as old trees decline. No pesticides are used on the grounds, and two garden areas allow students and faculty to grow vegetables, herbs, perennial, and annual plantings. Gourds grown in the vegetable garden are used for still life charcoal drawing instruction in sixth grade. Vegetables, annuals, and perennials are germinated in the greenhouse as part of science unit on plants, and are planted in rotations throughout the year to animate the school's front walkway. Others annuals are planted at the Lower School garden dedicated to pollinators, as there are three beehives on that campus.

Students have planted native shade trees in the past three years along the sidewalk near the parking lot to reduce heat gain on the east-facing facade where the sun warms surfaces quickly. In addition, a shared soccer field with the city of Alexandria hosts physical education classes and sports instruction behind the school gymnasium. Ample open space in the adjacent 40-acre city parkland surrounds the school. Mature native specimen trees, open space, an amphitheater, and a reconstructed Civil War fort site are available to the middle school students in this adjacent parcel. This significant historic site is the setting for larger gatherings, picnics, and natural history walks by the middle school students and faculty throughout the year.

Nutrition and Dining

SSSAS offers its students and faculty healthful dining options that include daily fresh fruit in the dining hall, as well as fresh fruit available all day for the hungry student. A salad bar with at least 16 different vegetable selections is prepared daily and is a student and faculty favorite lunch choice. The school offers daily vegetarian options, which includes high protein foods such as lentils, kale, tofu, and quinoa.

Trayless dining began in 2012 and makes students mindful of appropriate portions and reducing food waste, and students may re-enter and receive additional servings, as they desire. Students who bring lunch are encouraged to pack a waste-free lunch with re-usable containers. A small-scale composting program run by students carries food to a 30-gallon outdoor composter, whose product is spread on the schoolyard gardens. The school begins a compost service in April 2016 to manage the estimated 37% of solid waste eligible for composting.

The school's contracted food service regularly procures produce from Virginia farms and orchards, as well poultry and eggs from regional sources. While there is not an official farm-to-table program, the school's director of food service works to provide as many low-fat and high protein meals as is possible each week, with a wide selection of fresh fruits, vegetables, and a daily vegetarian option, integrating local produce when available.

Goal Area 3: Effective Environmental and Sustainability Education

St. Stephen's and St. Agnes Middle School excels in its environmental and sustainability education with a long-term commitment to integrating sustainability across a range of subject areas and by providing experiences in diverse natural settings to foster an understanding of the environment. Students are aware of the science, practices, and challenges related to environmental sustainability, which is integrated into the middle school's culture and curriculum. The students' continuous exposure to the discipline in an array of subjects and experiences is also reinforced through tests, class projects, and discussions.

Sustainability Curriculum

St. Stephen's & St. Agnes middle school makes sustainability and the concern for the environment core to units of learning. Teachers integrate a respect for the Earth and its peoples a priority, and integrate this in science, history, art, and religion courses.

The school's Director of Environmental Stewardship and 20 faculty and staff assessed the school's environmental literacy benchmarks in the 2014 Virginia Association of Independent Schools (VAIS) 10-Year Accreditation study. The VAIS study determined that the school curriculum would continue to be strengthened by increased units in sustainability and renewable energy. To forward this initiative, the Director meets regularly with the division director and science department to implement the school's plan. The curriculum has been adapted and revised to include longer and more probing inquiries into issues such as renewable energy, city design for increasing populations, sustainability and natural resources, as well as examining sustainability through the lens of history.

Sustainability education permeates the sixth to eighth grade science curriculum in the course content, observational study, and practical applications. The sixth grade science curriculum introduces students to units that include photosynthesis and marine biology to serve as the foundation for future study of ecological communities. A unit on urban sustainability challenges young scientists to address energy, transportation, food, housing, business, and open space within a hypothetical city with constraints of unique climate-related challenges. Students test alternatives until they find a satisfactory solution that balances the three-pronged stool of environmental health, sound economics, and community well being. Teams present solutions to their peers and parents and share physical and policy solutions that fit the project constraints. In November 2015, the Virginia Association of Independent Schools awarded middle school's sixth grade science teachers Tim Dodds and Alex Mooskin its prestigious "Innovation in Education Award" for their global approach and encouraging students to think beyond boundaries in the "Green City" curriculum.

Global connection and real world experiences are integrated in sixth grade science through curricular units on air quality, renewable sources of energy, and access to clean water. Students construct water filters and erosion tables to add hands-on learning to their knowledge base.

The seventh grade curriculum emphasizes the scientific and cultural components of environmental sustainability, as well as ecology. Students are introduced to the concepts of climate change, ozone layer depletion, greenhouse gases, and the lasting effects of water and air pollution. During a month-long investigation of Chesapeake Bay ecology, students perform labs and view live organisms such as Eastern Oysters (*Crassostrea virginica*), Blue Crabs (*Callinectes sapidus*), and phytoplankton to focus on the effects of eutrophication and erosion on the Bay and surrounding watershed. Particular emphasis is given to the lifestyle of the residents living in the threatened communities of Smith and Tangier Islands, which they will later experience first-hand in a four-day field trip.

Eighth grade students spend a month in a sustainability and energy unit in which they examine traditional non-renewable energy sources and compare them to renewable energy sources. Students use graphs, data tables, and diagrams in their comparisons. Students build functional windmills and test blade angle, length, and shape. Stormwater and water filtration are also part of the eighth grade curriculum and students construct water filters to understand sewage treatment plants. In addition, resource acquisition, disposal, and recycling are taught so that students understand the lifecycle of elements used for energy and manufacturing.

An intensive study of the Chesapeake Bay explores the consequences of human actions and responses to environmental crises. To complement the classroom study, all students spend one day on a Chesapeake Bay tributary to study water quality and aquatic life. Students collect data on salinity, dissolved oxygen, nitrates, turbidity and pH. Nearby tributaries of the Bay, such as the Anacostia River, the Potomac River, and nearby Four Mile Run, the school's watershed, are additional locations of study and inquiry. Students experience first-hand many of the natural areas between the Virginia Piedmont and its Coastal Plain. The school's location between two provinces allows exploration of the unique geologic formations along the Potomac River uplands, while also studying erosion and deposition along the beaches of the Lower Potomac.

Building on the curriculum from the prior units in seventh and eighth grade, seventy percent of the eighth grade students embarks on a four-day Chesapeake Bay islands trip each spring, on which the students study the scientific, cultural and scientific aspects of the Bay communities of Smith and Tangier Islands, while performing service to the local communities. Students to live sustainably with limited sewer, water, and waste services and a "no waste left behind" mindset.

History courses challenge students to examine the environment by researching and documenting the causes and effects of major environmental disasters. Eighth grade students create documentaries on environmental catastrophes from the twentieth century, including the Dust Bowl, the Exxon Valdez oil spill, and the recent California drought. Students integrate historic images, news media, and research to prepare a narrative to create documentaries in iMovie, which they post on YouTube for community review.

The outcomes of the natural area outings and trips are continued discussions on the cause and effect of human action. Students raise questions such as, “Where does the water flow from our parking lots and rooftops?” “Why should we replant trees regularly on our campus?”, “How does sea level rise affect the people whom we have met in the Chesapeake Bay communities we visited?” , “What happens to a laptop computer when it is traded up for a new model?”

Each successive curriculum builds upon the students’ knowledge gained in the prior academic year. For example, students in seventh grade learn about how to construct food webs as a way to illustrate energy flow in ecosystems. Students in eighth grade then analyze and create Chesapeake Bay food webs that show the effects on biotic factors before and after human influence in this ecosystem.

Student progress is assessed in a number of ways, including class debates, informal presentations, unit tests, individual and graded laboratory assignments, and “critter” investigations, which includes research and scientific illustration on regional flora and fauna.

Episcopal Church Identity and Global Sustainability

As a church school, SSSAS religion courses emphasize the responsibilities of human beings to care for the natural world and to show compassion for communities where natural resources are compromised. Katherine Jefferts-Schori, past Presiding Bishop of the Episcopal Church, writes, “We recognize our connections to fellow citizens and neighbors around the world who are already suffering from the consequences of climate change, and acknowledge our responsibility to those yet unborn, who will either benefit from our efforts to curb carbon emissions or suffer from our failure to address this ethical imperative. We believe that addressing climate change is a moral obligation to our neighbors and to God’s creation, so that all may enjoy full, healthy, and abundant lives.” As an Episcopal Church school, St. Stephen’s & St. Agnes take this mandate seriously in the education of its students through its curriculum, as well as through service learning opportunities that are offered.

In world religions classes, sixth grade students study how different communities across the globe interact with the natural world. Habitat care is included in these lessons and some teachers use specific examples of the harm caused to animal habitat when resources are obtained for manufacturing and food. Religion courses also include a unit on the harm to an ecosystem and communities when resources are obtained without regard for the environment. One unit compares conventional farming to sustainable farming. Teachers also discuss the use of child labor in many products sold in the United States, such as coffee and chocolate. This is also the focus of one chapel service homily each year to educate the middle school community about consumer choices and sustainability.

In addition to the regular service-learning projects that work with a nearby food pantry, a homeless shelter in Alexandria, and the Chesapeake Bay Foundation, SSSAS is partnered with St. Paul’s School in Montrious, Haiti, where its upper school students travel each summer to run

a summer camp with the grade school students in this village. The students share their experiences each year in a chapel service at the middle school and speak of the lack of clean water, soil erosion, polluted rivers and environmental issues that hinder the health and well-being of the students at St. Paul's School in daily life.

Practices and Programs at the Middle School

Sustainability and environmental stewardship occupy a primary place in the culture of the middle school. The school emphasizes personal responsibility to conserve, to recycle, and to reduce energy use and consumption. Classrooms learn about lowering thermostats, turning off power strips and working with natural daylight. Printing release codes at each school printer minimizes wasted paper by students and faculty. In addition, disposable items are discouraged at school gatherings and sports competitions and students and faculty use refillable water bottles at all athletic practices. Students and faculty integrate a paperless classroom assignment platform, and convey information about the school's daily energy consumption in its real time [energy dashboard](#). Teachers integrate data from the dashboard by graphing and solving problem sets in science and mathematics, furthering a connection between the environment and technology.

At the beginning of each academic year, middle school students sign the school-wide "Green Saints Pledge" to address the responsible use of electronics and energy, and to commit to less waste. Students transport paper and cardboard from classrooms to the recycling bins weekly. A [hallway monitor](#) display shows the daily consumption of energy in kilowatt-hours, and the school has participated for eight years in a national energy challenge to reduce school-wide electricity consumption, achieving reductions between 24 and 38% in each competition.

The annual "Environmental Awareness Week" in April engages students in a series of activities to emphasize stewardship and responsibility, such as biking and walking to school, planting trees on the grounds, and germinating seedlings for vegetable gardens grown for food bank gardens in nearby neighborhoods. One highlight of the week is the Earth Day chapel service, in which the school's weekly chapel service migrates to an amphitheater. Student authored petitions, readings, and reflections are focused on earth conservation and personal responsibility, all occurring in a shaded grove filled with the sounds of birds calling.

Coincident with the curricular units on the Chesapeake Bay, art and science faculty collaborated to design the "Chesapeake hallway," in the science wing, which features murals that show cross sections of the Bay, with displays of land and aquatic life. Portions of piers and docks protrude from the mural and student affix real scale models of the flora and fauna of the Bay that they have identified in class.

A campus greenhouse serves as a hub of science class and after-school activities where students and faculty germinate plants for study and as a source of starter plants for area gardens grown for local food banks. The greenhouse has also cultivated milkweed (*Asclepias L.*) plants and American Chestnut (*Castanea dentata*) trees to assist with habitat and reforestation efforts. In

addition, dozens of annual geraniums (*Pelargonium sp.*) are germinated in the greenhouse as decorations for the eighth grade graduation ceremony each June.

Each winter, middle school students join hundreds of other students at the [Students for Sustainability Conference](#). The conference, hosted by SSSAS for eight years, includes environmental speakers, hands-on laboratory experiments, learning sessions and environmental contests. Keynote speakers have included filmmaker Ian Cheney, school and urban garden expert Stephen Ritz, and environmental artist Chris Jordan. At the conference breakout sessions, students mix biodiesel fuel, build windmills, measure the temperatures of light bulbs, and learn to pack waste-free lunches. Since 2007, SSSAS has inspired regional students to return to their home schools and spread the knowledge gained in this day of learning and inspiration. SSSAS is committed to hosting this annual conference to allow students across the region to share the excitement, challenges, and thought that support a sustainability mindset in schools.

The “Eco-Squad,” the school’s environmental club, implements activities to raise environmental awareness among the student body. The student-led initiatives include composting and caring for school gardens and the greenhouse. Four student teams are currently working on the “eCybermission Challenge” of the U.S. Army in which students research and offer solutions to challenges that include identifying renewable energy sources and the conservation of honeybees.

Sustainability Education for Faculty

The school encourages teacher enrollment in continuing education opportunities, funded by the school’s teaching grant program. SSSAS middle school teachers have studied environmental issues and sustainability curriculum in Shelburne Farms, Vermont, the Chesapeake Bay islands and towns of Maryland and Virginia, as well as in other countries including Japan (United States Exchange for Education for Sustainable Development), Haiti, Costa Rica, and Tanzania. Many of these lessons have been integrated into the curriculum in the years following the teacher’s summer study opportunity. The teacher grant experiences are shared in faculty meetings each quarter, as well as at a school-wide event “Evening with the Teachers,” where the teachers describe the coursework content to parents and fellow faculty, and its integration into the curriculum. These presentations are recorded and posted to the school website.

Faculty members at the middle school who serve on the environmental stewardship committee partake in an annual retreat and educational exploration. The 2015 retreat was held on a learning boat in the Potomac River and included testing water adjacent to a state of the art sewage treatment plant serving Washington, D.C. and vicinity. SSSAS faculty also fished and identified species of marine life in a river with a record of poor environmental practices. Instruction on the local and regional watershed also was included in the day of professional development, conversation, and fellowship.

Community Partnerships

The middle school has enjoyed a 19-year partnership with the Chesapeake Bay Foundation, a regional non-profit environmental advocacy and education group. On trips with this group, teachers and administrators explore the Bay's tributaries, where they examine the resilience of marine life, submerged aquatic vegetation, and the interconnectedness of their habitat with humans from biological and economic perspectives. Students have grown wild celery grass (*Vallisneria americana*) in the classrooms to be planted in Potomac River tributaries to encourage more habitat for aquatic life. In the rivers near the middle school, students learn the effects of human actions, such as sewage treatment and stormwater management, and discuss the effects of each on regional water quality. Teachers have extended study of the Chesapeake Bay into summer enrichment courses in aquatic biology, zoology, ecology and geology, as well. Natural processes learned on these trips are assessed through testing during science classes. Student assessment remains largely in the form of presentation of scientific findings, as well as in testing that occurs at regular intervals in each of the three science grades.

Locally, in the city of Alexandria, Virginia (with its own Eco-City charter), the school integrates its goals and actions with the city's environmental goals. These include a reforestation goal for 40% tree canopy coverage, as well as improved stormwater management through education and implementation of best practices. The school's efforts coincide with each of these programs at its middle school campus, including tree planting with native shade trees, and bioretention for its stormwater management.

Environmental Stewardship as a Civic Responsibility

Middle school students at St. Stephen's & St. Agnes are instructed in the role that humans play in the restoration of the ecology of the environment and the necessity for humans to live responsibly in their community. Students participate in cleaning up local woodland and riparian environments, as well as working on area organic farms. Middle school outings emphasize waste reduction by bringing little disposable material with them on trips as well as sports tournaments.

SSSAS students are engaged in a variety of projects that involve community care. Students have worked at an organic farm in Maryland that germinates seedlings for erosion control projects in the watershed. They plant vegetables grown for the local area food bank at the same farm. The student government leaders participate in the Potomac watershed cleanup each April, sponsored by the Alice Ferguson Foundation, by cleaning trash and debris from Four Mile Run, the school's watershed that runs to the Potomac River.

In the four-day Chesapeake Bay mini-course each spring, students construct and install osprey (*Pandion haliaetus*) stands at locations throughout the Chesapeake Bay watershed. In addition, summer zoology camps have built over 600 wren-nesting boxes over many summers from recycled lumber at the middle school.

Each grade level “bonding day” at the outset of the semester includes a service-learning component, such as trash collection along the Potomac River at Leesylvania State Park, or installing birdhouses in the campus woodlands to provide habitat. The Girl and Boy Scout troops at the middle school campus, as well, often participate in stream clean up or habitat protection projects in the Alexandria area as part of an environmental unit.

Increased student understanding of environmental stewardship in daily habits and practices within the middle school is the most noticeable outcome. Having seen first hand the effects of both responsible and irresponsible human actions, St. Stephen’s & St. Agnes middle school students are motivated to “do the right thing” at school and in their community. The sincere hope is that this attitude, combined with the knowledge gained through history, science, religion, art, and technology classes, results in the emergence of citizens who make wise judgments and actions regarding the Earth.