

GOVERNOR'S ENVIRONMENTAL EXCELLENCE



AWARDS

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The Governor's Environmental Excellence Awards recognize successful and innovative efforts that improve Virginia's environment. The annual awards program is run as a partnership between the Department of Environmental Quality and the Department of Conservation and Recreation.

Canon Virginia, Inc.

RECYCLED TONER PELLET PROJECT **GOLD**

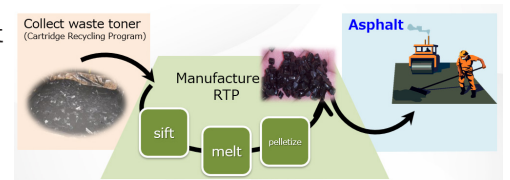
Canon Virginia (CVI) is the manufacturer of toner, toner cartridges, cameras, and machine components. Canon's Recycling Toner Pellet Project targeted the waste toner dust that was extracted from toner cartridges as part of the recycling process. The waste toner dust is a combustible substance that CVI was sending to a waste-to-energy processing plant at a high cost. The toner pellet recycling project is a perfect example of CVI's commitment to the preservation of the environment. CVI prides itself on practicing the circular economy model, which involves reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. This practice led Canon to look for opportunities to extend the life-cycle of the toner dust and to reduce waste.

CVI developed an innovative, proprietary process that results in a safe material that can be used in roadways. The process first sifts out impurities like plastic, foam,

and metal from the toner dust. The dust is then melted, cooled, and pelletized. The process is extremely efficient, highly productive, yields minimal waste, produces low emissions, utilizes existing manufacturing floor space, and yields a high-quality product. A multi-disciplinary team worked with the Virginia Department of Transportation who approved the toner pellet material for use on roadways.

The process has eliminated the disposal of 400 tons of toner per year, which was one of the facility's largest solid waste streams. This also eliminated the disposal fees and the environmental impacts of transporting the material out-of-state. The toner pellets are currently being purchased by a local asphalt company who uses them as a binder and coloring aid. The sale of toner pellets resulted in an annual profit of \$300,000 per year. Today you can find asphalt with Canon's toner pellets in Virginia's roadways.

Canon
CANON VIRGINIA, INC.



Grenova

REUSABLE PIPETTE TIPS **GOLD**

Grenova is a Virginia-based sustainable biotech firm that has designed, developed, and manufactured the world's only devices that wash and clean contaminated plastic pipette tips for reuse. Reusable pipette tips address two issues facing labs: supply shortages and an increase in plastic waste. Pipette tips are used for dispensing precise amounts of liquid in diagnostic tests. Tests often require multiple pipette tips, so single-use pipette tips can make up a large portion of a lab's plastic waste.

In response, Grenova created a solution by manufacturing the world's only pipette tip washer so that tips can be used again and again in the lab.

GRENOVA

Today, Grenova's tip washers are used in some of the largest labs around the world including within NIH, NCI, and CDC. Labs using Grenova's tip washers report a 90% reduction in the disposal of plastic pipette tips. The benchtop, automated washers are convenient to use. Most tips are reused 10-25 times; however, they can be reused by to 40 times. Recent finding from researchers at the CDC demonstrated that Grenova's washed tips displayed no contamination or soiling, no loss of quality, and maintained accuracy. The products have been tested and validated by federally certified labs. Due to Grenova's systems, over one billion

pipette tips have been washed and reused, saving money, reducing waste, and reducing carbon footprints for labs.



HRSD & DCWater

DEVELOPMENT OF NEXT GENERATION MAINSTREAM NITROGEN REMOVAL TECHNOLOGY THROUGH PARTIAL DENITRIFICATION-ANAMMOX (PDNA) **GOLD**

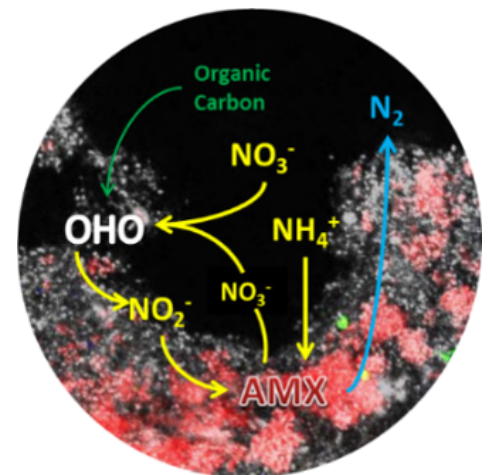
Hampton Roads Sanitation District (HRSD) provides wastewater treatment to 1.9 million people in 20 cities and counties in southeastern Virginia. HRSD currently treats an average of 150 million gallons of wastewater daily. Over the past 12 years, DC Water and HRSD have undertaken an extensive engineering and applied research program to identify and develop novel, cutting edge technologies with the goal of implementing truly sustainable and affordable advanced nutrient removal wastewater treatment plants.

The conventional activated sludge process has existed for over 110 years. The innovative DETOUR process is a versatile and adaptable technology that can use existing concrete tanks for treatment. The art of improving the activated sludge technology to meet more stringent effluent limits is a concept of 'DO more, IN less, WITH less'. The partial denitrification-anammox technologies, known as DETOUR, invented in collaboration between HRSD and DC Water, does exactly all of these things. First, it 'DOES more' treatment, removing more nitrogen pollutants by polishing the remaining nitrogen species using existing post-treatment tanks. Second, the technology is contained 'IN less' tank volume by minimizing the need

to aerobically oxidize ammonia to low levels and by using a biofilm process that intensify treatment. The third and final aspect, it achieves these features 'WITH less' chemicals and energy, using more efficient anammox bacteria.

Once the fundamentals were established, HRSD and DC Water focused on development of integrated process controls and technology pilots. Successful pilot testing has led to two full-scale implementations at HRSD, the first two successfully operating mainstream anammox processes in the world. With the upgrade, HRSD avoided an \$80M capital upgrade that would have applied conventional technologies.

This is a revolution for wastewater treatment and a huge benefit for existing plants in the United States, but also allows new facilities to leapfrog age-old approaches. Development of mainstream shortcut nitrogen removal via anammox represents a paradigm shift for wastewater treatment, offering an opportunity to achieve sustainable nitrogen removal, energy neutral or even energy positive facilities, dramatic reductions in treatment costs, capacity benefits, and significant decreases in carbon footprint.



Henrico Doctors' Hospital



Henrico Doctors' Hospital
HCA^{VA}

SUSTAINABILITY IN HEALTHCARE: RECYCLING AND LOW FLOW ANESTHESIA **GOLD**

Henrico Doctors' Hospital is a full-service healthcare facility that serves the greater Richmond community. In 2017, Henrico Doctors' Hospital had no recycling program in place. Dr. Varun Dixit embarked on a robust environmental education program in the hospital, educating operating room (OR) medical staff, environmental services personnel, and hospital administrators of the need to recycle the facility's waste and promote sustainability in healthcare. After receiving approval to pilot a new recycling project in the cardiac ORs, Dr. Dixit quickly expanded the program to encompass all the hospital's ORs, as well as the cardiac catheterization lab, endoscopy, and obstetrics. The hospital now recycles more than 150,000 pounds of waste every year, equivalent to approximately 6% of the facility's total waste. The success at Henrico Doctors' Hospital also enabled Dr. Dixit to launch recycling programs at two affiliated ambulatory surgery center facilities. These two sites are collectively recycling over 50,000 pounds of waste, bringing the quantity of aggregate total waste recycled to exceed 200,000 pounds per year.

Leveraging the success and widespread receptivity of the recycling program within the hospital, Dr. Dixit then embarked on a mission to reduce the total usage of the environmentally harmful inhaled anesthetic agents desflurane, sevoflurane, and nitrous oxide. Dr. Dixit conducted extensive educational sessions to teach anesthesia clinicians why low-flow anesthesia techniques are better for the planet and patients, and how to safely adopt low-flow anesthesia practices. These gases significantly contribute to the greenhouse gas effect, and they are typically used in much higher concentrations than needed to maintain anesthesia. Using the low-flow technique reduced the sevoflurane used to administer equivalent hours of anesthesia over a six-month period by 264 bottles. In terms of environmental impact, the EPA compares each bottle of sevoflurane gas to the equivalent of driving roughly 400 miles in a car. Reducing sevoflurane use by 264 bottles over six months equates to saving approximately 200,000 driving miles per year.



Beachtree Group, LLC, City of Franklin, & Virginia Outdoors Foundation

BLACKWATER PARK **GOLD**

Blackwater Park is a 200-acre park in Franklin that opened in late 2022. The park is the result of a partnership between the Beechtree Group, the City of Franklin, and the Virginia Outdoors Foundation; each of which played a vital part in making the park possible. Blackwater Park was acquired, funded, and constructed by Beechtree Group and the Virginia Outdoors Foundation before being transferred to the City of Franklin. Beechtree led the effort by finding acquisition funds and holding

the property for four and a half years while securing federal, state, and private grants.

Beechtree arranged for the installation of an 800-foot boardwalk, two miles of trails, and the construction of parking, roads, a pavilion, and kiosk. Signage and interpretive materials were also designed and installed by Beechtree. A trail constructed through Turkey Island was designed to serve both people



Beechtree Group LLC

Restructure... Restore... Renew...



and wildlife. The low-impact and ADA compliant trail gives park visitors the opportunity to observe wildlife and learn from the educational signage. The trail can be closed during nesting season, if necessary, to reduce impacts on the turkey flock. An easement on park land along the river and the adjacent forested wetlands prohibits harvesting. This ensures a wooded buffer of 500 to 1,000 feet along the river. The park serves as a flood storage area for the city, helps to protect a vulnerable part of the town, and provides habitat for two threatened species.

It supports the Virginia Outdoors Plan by adding trails, natural area access, and outdoor space. The park has been designed to enable groups from elementary school age children to veteran outdoors people to spend a pleasant half-day hiking, observing, and learning about the unique ecological resources that exist on the State Scenic Blackwater River.



Hampton City Schools

OYSTER RESTORATION PROJECT **SILVER**

The primary function of the Hampton City Schools Oyster Restoration project is to engage educators and learners in grades K-12. The project focuses on place-based environmental education that builds an active and environmentally literate citizenry equipped with the skills and knowledge to address the complex questions and problems that threaten the natural world. The project enlisted the support of many committed community partners. Tidewater Oyster Gardener's Association donated oyster floats and spat, assisted with professional development, and provided guidance in building oyster floats. This support allowed for the expansion of the program to new teachers and schools.

Shored Up, LLC, assisted with the procurement of oyster cubes and spat on shell from the Chesapeake Bay Foundation and provided an oyster history walking tour of downtown Hampton for participating teachers. Funding from the Hampton City

School Science Department enabled the purchase of spat to expand the program to additional classrooms. The support of the Elizabeth Lake Environmental Stewardship Committee has made possible annual spring field trips to the oyster reef for students to participate in educational stations and "plant" their oysters. Funding from Hampton Waterways Restoration Project has covered the cost of buses for these field trips.

The program has helped to develop environmentally engaged students and teachers. Thousands of students who have participated in this program have learned the benefits of oysters and oyster reefs to the water quality in the Hampton and Back Rivers, and subsequently the Chesapeake Bay. This program has had substantial impact on student and teacher environmental footprints.



Roanoke Cement Company, Troutville Plant

SUSTAINABILITY PROGRAM SILVER

Roanoke Cement Company (RCC) is the only cement plant in Virginia. Bordered by Jefferson National Forest and the Appalachian Mountains, strong environmental awareness is inherent in daily operation. RCC's sustainability program shows its leadership and innovation. RCC has created long-term alliances with EPA ENERGY STAR, ISO 50001 Energy Management, Green Business Certification's TRUE Zero Waste, and the Portland Cement Association. These alliances have helped develop environmental and energy saving strategies and measure the performance. Through RCC's energy initiatives, there has been a 12% reduction in the plant's use of electricity over the past eight years. The facility's energy management accomplishments culminated in the certification to ISO 50001 Energy Management standard, which has delivered results unique for any cement manufacturer.

RCC is proud of the full conversion of its cement plant to the production of Type IL portland-limestone cement, a low-carbon construction material. It allows RCC to deliver lower carbon products and solutions to customers. The facility's efforts do not end there. Reducing waste is also a focus, and RCC now diverts almost 95% of waste from landfills. In addition, the facility recycles 95% of its water. Titan Cement Group, RCC's parent company, supports these efforts through corporate commitments. RCC's culture ensures commitment to future actions that will sustain and enhance the reduction of its environmental footprint. These initiatives have made RCC a leader among cement manufacturers nationwide in reducing overall environmental impact.



University of Virginia

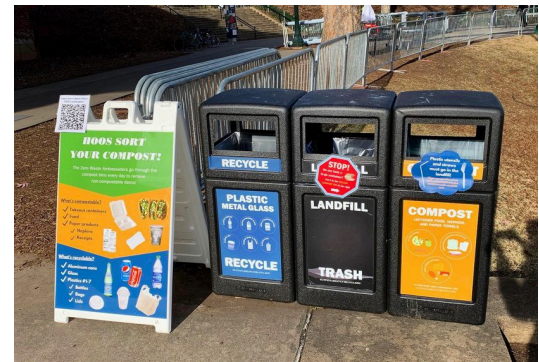
GREENING OF GOVERNMENT SILVER

The University of Virginia's (UVA) sustainability programs exemplify how Virginia can lead by example to reduce environmental impacts and protect Virginia's natural resources. This is especially evident in how UVA has implemented Executive Order 17 (EO 17), Recognizing the Value of Recycling and Waste Reduction. With hundreds of buildings located across 3,200 acres, the University is taking a dual approach to waste minimization practices. Through both infrastructural and behavior change efforts, UVA is working towards an ambitious goal of reducing waste generated by 70% compared to 2010 levels. This aligns well with EO 17, which encourages institutions to explore more robust recycling and compost programs.

During fall 2022, UVA implemented three pilot programs with the hope of establishing a permanent presence if successful. The pilots prioritized increasing the quantity and access to compost and recycling bins, heightening education around waste sorting practices, and identifying major diversion opportunities. The pilots included six publicly accessible zero waste stations at the McIntire Amphitheater, expanding the "Green Game" to all six home football games, creating a Zero Waste Request Form for students, faculty, and staff to request recycling and compost bins, and aids in supplying compostable dining wares for small-scale events. UVA's environmental goals extend beyond waste reduction and recycling to include electricity, heating and cooling, transportation, and water conservation.



SUSTAINABILITY · UVA *From the Grounds Up*



Fairfax County's Solid Waste Management Program

PURPLE CAN CLUB GLASS RECYCLING PROGRAM **BRONZE**

Fairfax County, like many other local governments in Virginia, had removed glass from their single-stream recycling program due to issues caused by broken glass pieces, such as contaminating other recyclables and damaging equipment. However, the county continued to look for economic and sustainable ways to manage glass. This led to the creation of the Purple Can Club, which allows customers to drop-off their used glass containers in glass-only recycling containers that are distributed around the county. From these containers, the material is consolidated and processed. After minimal processing, the glass becomes feedstock for new glass bottle producers, fiberglass manufacturers, blast media users, and as needed, a high-quality sand and gravel substitute used by the county's public works. Recycling glass has many proven environmental

benefits: it reduces emissions, saves energy, and reduces consumption of raw materials. To date, the Purple Can Club has recycled 45 million pounds of glass. In 2022, Purple Can Club has recovered 10.5 million pounds of glass. The program is already being replicated around Virginia.



FAIRFAX COUNTY
DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL SERVICES

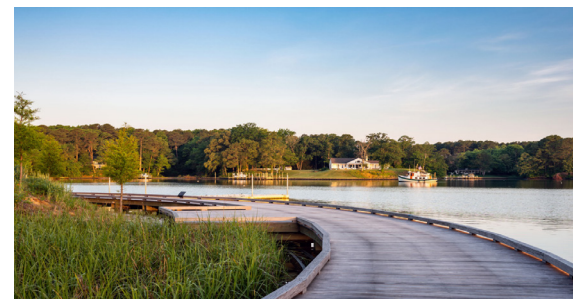


The Tides Inn

SHORELINE RESTORATION PROJECT **BRONZE**

The Tides Inn is a resort situated on Carter's Creek in the Chesapeake Bay watershed. The Tides takes pride in deepening their guest's connection to nature. When looking options to stabilize the land around the hotel, The Tides chose shoreline restoration over tradition rip-rap because it works with nature. In addition, The Tides chose to invest in a boardwalk as part of the project as a teaching tool. It's Shoreline Restoration Project includes a boardwalk with interpretive signage for the public to easily walk along and view the living shoreline, creating a space for community teaching and engagement. Construction of 18,000 square feet of living shoreline allows for a continuous, natural buffer along the 150 linear feet of shoreline. The project included

planting 42 new trees, 10,600 shoreline plants and 10,900 upland plants. This restoration project is provides many environmental benefits, such as erosion control, wetland re-establishment, and habitat increase for aquatic life, including oysters and crabs. It is also strengthening hands-on educational programming and community partnerships.



Christopher Newport University & City of Newport News

TOWN & GOWN PARTNERSHIP: SOLVING SUSTAINABILITY TOGETHER **BRONZE**



For the past three years, the Center for Sustainability in Education at Christopher Newport University (CNU) has partnered with the City of Newport News to address challenges linked to energy use, food scarcity, waste management, and social justice. This Town and Gown partnership has acted as a living laboratory through which community stakeholders, local government leaders, faculty, students, and university staff can all work together to better understand, explore, and address their shared environmental challenges and opportunities.

The partnership has resulted in numerous programs that have reduced the environmental footprint of CNU and the city. For example, CNU Ferguson Fellows worked on the SolSmart initiative, which promotes the use of best

practices by local government to ensure greater ease and affordability to install and access solar energy. The initiative was then implemented by the city. The partnership implemented waste reduction and pollution prevention initiatives for the One City Marathon and the Food Forest project. Additionally, the move-out initiative "Give It Up" encourages students to donate items and generate less waste, reducing the environmental footprint. The partnership also created The Fear to Hope Project, which has experimented with carbon-storing trees, reducing the carbon footprint, and studying trees that are resilient to salt water. In addition, the Oyster Restoration Project assists in preventing the erosion of coastlines while improving the water quality by adding oyster reefs. This intentional partnership with CNU creates a more sustainable city.



University of Virginia

SUSTAINABLE LABS PROGRAM **BRONZE**

UVA has a goal of becoming carbon neutral by 2030 and fossil-fuel free by 2050. To help reach this goal, UVA implemented a Sustainable Labs Program. In terms of sustainability projects, labs are not viewed as low-hanging fruit, but as high-risk spaces that are hard to access and even harder to understand occupants' needs. Labs account for 13% of space on the UVA campus while being responsible for 33% of its total energy consumption. Reducing the energy intensity of labs would be necessary to meet UVA's energy goals.

This program takes advantage of every opportunity for energy savings found in labs, with the added benefits of enhanced safety features and strong

engagement with research faculty, students, and staff. The facility has fully implemented Sustainable Labs in two research buildings to date, carrying out targeted controls upgrades, installing LED lighting where applicable, and ventilation risk assessments resulting in safe reduction of air changes. The team has designed and implemented specialized outreach programs, such as the Green Labs Certification, Shut the Sash for chemical fume hoods, and the International Laboratory Freezer Challenge for lab cold storage. These measures resulted in \$635,000 savings and a 23% decrease in carbon dioxide equivalent emissions since November 2021.



Newport News Waterworks Department

GRAFTON PONDS EXTENSION **BRONZE**



In 2017 Newport News Waterworks (NNWW) became aware that a vital piece of watershed property was available for purchase. The 197-acre parcel was one of the last remaining large undeveloped properties in the Harwood's Mill Reservoir watershed. NNWW first looked to the Department of Conservation and Recreation for funding assistance; however, the proposed land was ineligible due to zoning requirements. NNWW found another option for funding assistance through the sale of conservation easements on property it already owned. Using money generated from the sale of conservation easements and money from the Waterworks Land Fund, Newport News was able to complete the purchase in 2022. The net result of this purchase

and sale of the conservation easements is the permanent protection of 747-acres of forested watershed in the middle of suburban York County. This contributes to cleaner drinking water, protection of vulnerable species, habitat preservation, and more. The property is open to the public year-round for no fee, sunrise to sunset.



UPACO Adhesives - Worthen Industries, Inc.

SUSTAINABILITY PROGRAM - HONORABLE MENTION

UPACO Adhesives, a division of Worthen Industries, Inc, is a manufacturer of industrial adhesives and coatings with more than 150 years of industry experience located in Richmond. Worthen's sustainability strategy is built upon its ISO 14001 Environmental Management System. Worthen has established three sustainability goals that focus on the reduction of Scope 1 and Scope 2 Greenhouse Gas (GHG) emissions, reduction of normalized energy usage, and the reduction of waste with a goal of Zero Landfill.

In Richmond, UPACO's sustainability efforts work towards each of these goals. Equipment upgrades have improved energy efficiency. Waste reduction efforts have led to the establishment of multiple recycling partnerships that provide outlets for process materials such as low-density & high-density polyethylene plastics, scrap metal, and mixed streams including paper and cardboard. Implementation of these partnerships has kept over 100,000 pounds of materials out of the landfill. UPACO Richmond continues to work toward a goal of zero landfill.



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A decorative laurel wreath in green, positioned at the bottom of the text block, framing the word 'AWARDS'.