
UNIVERSITY OF VIRGINIA

SUSTAINABILITY

ANNUAL REPORT



SUSTAINABILITY · UVA
From the Grounds Up

2021–2022

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The 2021-2022 UVA Sustainability Annual Report provides a snapshot of collaborative work accomplished by students, staff, faculty and alumni to advance UVA's sustainability goals over the past academic year. Aligned with the UVA Sustainability Plan's "Engage, Steward, Discover" framework, this report describes progress achieved in each area with accompanying stories to illustrate some of the many highlights from the year.

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OVERVIEW



The University of Virginia's prominence in higher education in environmental stewardship and equitable socioeconomic sustainability practices continues to build upon many years of leadership, the support of the Board of Visitors, and the work of thousands of individuals.

The University's interconnected approach to sustainability develops transformative and high-impact solutions across curriculum, research, operations and community engagement. Sustainability is the focus of or central to more than 370 courses, over 250 faculty-led research initiatives (representing over 83% of academic departments), more than 30 student groups, dozens of programs and over 100 annual events. Strategic collaboration on pan-University sustainability initiatives leverages the combined strengths of the University Committee on Sustainability, Office for Sustainability (OFS), Environmental Resilience Institute, Student Council Sustainability Committee, Global Environments + Sustainability program and many other efforts.

This year, the Committee on Sustainability was restructured to further enable a strategic, pan-University approach to the depth and breadth of sustainability at UVA, with accountability

to the Executive Vice President and Provost, the Executive Vice President and Chief Operating Officer and the Executive Vice President for Health Affairs. The committee is co-chaired by Colette Sheehy, Senior Vice President for Operations and State Government Relations, and Megan Barnett, Vice Provost for Academic Initiatives. Seventeen members representing staff, faculty and students have been appointed for two-year terms. The committee and its three subcommittees (Environmental Stewardship, Civic Engagement and Teaching & Research) advise UVA's top leadership on all environmental, financial, research and social aspects related to the University's commitment to sustainability and how those impact the future of the University.

Because of this robust approach, UVA has achieved STARS Gold certification from the Association for the Advancement of Sustainability in Higher Education, one of only 70 institutions worldwide with Gold certification under AASHE's current ratings.

In addition, the Princeton Review recognized UVA as one of the nation's most environmentally responsible colleges ranking us 93 on a scale of 60 to 99. (See pages 54-55 for additional recognitions for UVA Sustainability.)

Building on the Board of Visitors' December 2019 sustainability resolution, UVA adopted its second sustainability plan in October 2020, outlining 10 bold goals within an "Engage, Steward, Discover" framework to guide progress for the next decade. The 2020-2030 UVA Sustainability Plan builds upon commitments in UVA's 2030 Strategic Plan, previous sustainability goals endorsed by the Board of Visitors, and the 2016-2020 Sustainability Plan. UVA is also working with the College of William and Mary in a partnership focused on decarbonization, the Ivy+ Listening Post Sustainability Consortium, and the City of Charlottesville and Albemarle County to share best practices on climate action.

This year, UVIMCO announced a new investor responsibility framework for evaluating the environmental and social impacts of UVA's investments, which includes a commitment for a net-zero emissions investment portfolio by 2050, if not sooner. To build accountability at all levels of the University, schools and units, with guidance from the Committee on Sustainability, are currently developing their own sustainability plans in alignment with the 2020-2030 Sustainability Plan. The Darden School of Business became UVA's first school to publish its own comprehensive plan, which includes goals to develop 100 new teaching cases, publish 100 new articles and deliver 100 courses — all on sustainability topics.

2020–2030 GOALS

UVA's 2030-2050 Sustainability Plan seeks pan-University and interdisciplinary connections at all levels to STEWARD our resources on Grounds and beyond, ENGAGE our community and build sustainability awareness, and DISCOVER solutions to global challenges through research, curriculum and using the Grounds for engaged learning.

Within this framework, UVA's goals include:

1. Be carbon neutral by 2030 and fossil fuel-free by 2050
2. Reduce water consumption 30% below 2010 levels by 2030
3. Reduce waste footprint to 30% of 2010 totals by 2030 (a 70% reduction)
4. Reduce nitrogen emissions by 30% below 2010 levels by 2030
5. Increase sustainable food purchases to 30% by 2030
6. Advance equitable places
7. Build accountability for sustainability goal achievement
8. Enhance sustainability teaching
9. Promote sustainability research
10. Support Grounds-engaged research and learning

PROGRESS TOWARD UVA'S SUSTAINABILITY GOALS

ENGAGE

- OFS expanded student volunteer opportunities by establishing a new Service Learning program.
- The Zero Waste Ambassadors program provided students a hands-on opportunity to help UVA reduce waste.
- The Eco-Leaders program gave students a space to advocate for sustainability actions in residential halls.
- UVA's longest-standing student engagement program, Sustainability Advocates, invited 70 students to participate in a campaign-based leadership program.
- The Equity & Environment Fund, now in its fifth year, supported student-led projects at the intersection of equity and the environment, including a climate art exhibit and a bike repair clinic for lower-income community members.
- A collaboration between The Equity Center, the UVA Democracy Initiative Center for the Redress of Inequity, UVA Sustainability and the Jefferson School African American Heritage Center resulted in an interactive exhibit on local climate-focused action.

STEWARD

- Greenhouse gas emissions in 2021 were 43% lower than 2010 levels. OFS is now facilitating an update of UVA's climate action plan in tandem with a Strategic Thermal Energy study.
- UVA has achieved 78 LEED certifications, including at the College of Wise, representing over 4.5 million square feet of building space.
- The updated Green Building Standards will further reduce UVA's use of fossil fuels.
- Over the past three years, the Building Efficiency Program has reduced energy costs by \$21.6 million.
- OFS launched the Sustainable Labs Program, combining the existing Smart Labs and Green Labs programs, to expand efforts to reduce energy use in UVA's research labs, which account for roughly one third of the University's greenhouse gas emissions.
- The Parking & Transportation Dept. purchased four battery electric buses as it begins to transition its transit fleet away from diesel fuel.
- Since 2010, UVA has reduced its potable water consumption by 26.5%.
- UVA Dine spent one third of its food and beverage expenditures on sustainable food.
- Starting in July 2021, UVA prohibited the purchase, distribution or sale of certain single-use plastics.

DISCOVER

- The Environmental Thought and Practice program grew by almost 80%, with 51 students enrolled and additional faculty for a total of 35.
- The Global Studies Environment + Sustainability track had its largest class yet, with 112 students pursuing degrees.
- The Environmental Resilience Institute's (ERI) student fellow and intern programs have grown to over 100 students.
- The institute received a \$5 million national award to create the Coastal Futures Hub.
- ERI researchers are leading the "Global-to-Local" project to bridge global-scale climate dynamics with regional/local processes.
- ERI hosted the Environmental Resilience and Sustainability Grand Challenges Research Forum in partnership with the Offices of the Provost and the Vice President for Research.
- UVA launched the inaugural Summer Decarbonization Academy, engaging students on individual and group projects geared to achieving UVA's goals of being carbon-neutral by 2030 and fossil fuel-free by 2050.

2020-2030

PLAN PROGRESS

43%

REDUCTION IN GREENHOUSE GAS EMISSIONS SINCE 2010

370

SUSTAINABILITY-RELATED COURSES

1 of
70

COLLEGES WORLDWIDE WITH AASHE STARS GOLD (V2.1)

4,000

POUNDS OF COMPOST COLLECTED BY ZERO WASTE AMBASSADORS

78

LEED-CERTIFIED BUILDINGS ON GROUNDS AND AT COLLEGE AT WISE

\$21.6M

SAVED DUE TO ENERGY EFFICIENCY MEASURES OVER THE PAST 3 YEARS

26.5%

REDUCTION IN POTABLE WATER CONSUMPTION SINCE 2010

33%

OF UVA DINE'S FOOD AND DRINK BUDGET SPENT ON SUSTAINABLE PRODUCTS

\$5M

NATIONAL GRANT RECEIVED FOR COASTAL FUTURES HUB

4

BATTERY ELECTRIC BUSES PURCHASED, ARRIVING IN FALL 2023

ENGAGE

Fostering sustainability awareness, literacy and action across Grounds and beyond through innovative communications, programs, inclusive partnerships, peer-to-peer outreach and more.



ENGAGE

YEAR IN REVIEW

After two years of primarily virtual programming, the Office for Sustainability (OFS) energetically returned to in-person engagement and hands-on opportunities. From University-wide zero-waste events to volunteering in the student garden, work this year focused on three major objectives for mobilizing sustainability – strengthening service, prioritizing climate justice and continuing to broaden and strengthen engagement programs. The following stand-out sustainability initiatives align with these themes, and with UVA's 2020–2030 Sustainability Plan and Great and Good Plan.

STRENGTHENING SERVICE

Reflecting on student feedback, OFS prioritized expanding volunteer opportunities by establishing a **new Service Learning program**. A student-led team organized more than 10 volunteer opportunities for the UVA community, recruiting more than 250 students to participate in everything from kayak clean-ups to Green Games to garden workdays.

PRIORITIZING CLIMATE JUSTICE

As a community, we are increasingly coming to understand the profound connections between ecological sustainability and human rights. Students, faculty and staff are working with purpose and passion to **explore and address urgent issues of environmental and climate justice**. To help further conversations, the Sustainability team created a new website page dedicated to uplifting and sharing resources related to environmental and climate justice.

ADAPTING ENGAGEMENT PROGRAMS

OFS increased online engagement during the pandemic using innovative and safe ways to stay connected through social media, virtual events and more. These **strengthened digital communications** greatly expanded the reach of UVA's sustainability messaging beyond Grounds and enabled OFS to engage with more diverse audiences. For example, by highlighting alumni near and far on UVA's Sustainability LinkedIn page, OFS connected with dozens of recent graduates, supportive alumni and new organizations doing creative sustainability projects. As the pandemic subsides, the combination of broadened digital outreach and a return to in-person gatherings is reinforcing engagement efforts.



35+

SUSTAINABILITY STUDENT ORGANIZATIONS

256

SUSTAINABILITY VOLUNTEERS

100

EVENTS

105

ARTICLES & MENTIONS

5,300+

NEWSLETTER SUBSCRIBERS

7,325

SOCIAL MEDIA FOLLOWERS

ENGAGE

SUSTAINABILITY AWARENESS

STUDENT ENGAGEMENT

The Office for Sustainability's three student leadership programs returned to in-person programming and peer-to-peer education around Grounds.

The **Zero Waste Ambassadors program**, established in spring 2021, provided students a hands-on opportunity to contribute directly to UVA's waste minimization goal. Throughout the academic year, 30 student volunteers helped sort waste at Newcomb, O'Hill and the Amphitheater. The team collected approximately 4,000 pounds of compost and helped educate hundreds of their peers about waste minimization best practices.

Eco-Leaders, a partnership between Housing & Residence Life and the Sustainability team, gives students a **space to advocate for sustainability actions inside residential halls**. Twenty-four Eco-Leaders led sustainability training for respective residents, organized educational field trips to locations like Black Bear Composting, and rallied support for UVA's annual Dorm Energy Challenge.

UVA's longest-standing student engagement program, **Sustainability Advocates**, invited 70 students to participate in a campaign-based leadership program. This year, students focused on raising awareness of the 2030 Sustainability Plan goals and educating peers on sustainable food choices. Students organized projects ranging from pop-up farm stands to updating the curriculum page of the Sustainability website.

STAFF AND FACULTY ENGAGEMENT

As more employees returned to working on Grounds over the 2021-2022 academic year, UVA leaders helped us envision a **new "Future of Work,"** and OFS adapted many workplace engagement initiatives accordingly. OFS launched a re-engagement survey to learn what sustainability resources would be most helpful moving forward. OFS also released a series of Green Tips that encouraged employees to continue using some of the best practices adopted during the pandemic (such as paperless processes, minimizing commuting, etc.) and initiatives focused on both comfort and energy efficiency with a "Break-Up With Your Space Heater" campaign where individuals could exchange energy-intense space heaters for a safer, greener alternative.



ENGAGE

EQUITABLE PLACES

PICTURING CLIMATE JUSTICE

A collaboration between The Equity Center, UVA Sustainability and the Jefferson School African American Heritage Center, the **Picturing Climate Justice** exhibition showcased photographs, artwork and maps to highlight the need for an urgent and just response to climate change. The exhibit featured art alongside interactive data tools to help visitors better understand the nature of climate injustice in our region.

AFFORDABLE HOUSING IS SUSTAINABLE HOUSING

In January 2022, about 100 attendees joined the virtual 2022 MLK Community Celebration event hosted by the UVA Civic Engagement Subcommittee and the Community Climate Collaborative. Speakers from the Piedmont Housing Alliance, Piedmont Environmental Council, Cultivate Charlottesville, and Local Energy Alliance Program each shared points of **interconnection for just and equitable housing and climate solutions.**



EQUITY & ENVIRONMENT FUND

The fund's mission aligns with UVA's Great and Good Plan, which seeks to prepare students to be servant-leaders in a diverse and globally connected world, and with Advancing Equitable Places, one of 10 goals in the 2020-2030 Sustainability Plan. Last year's grants totalling \$10,605 supported innovative student-led projects on Grounds and in the community **tackling environmental justice, food equity and other cross-cutting issues.** A student review board assessed and selected applications according to criteria for impact. A refreshed website now includes stories of completed projects, reflecting what the students learned and the contributions they have made to UVA and to the Charlottesville region. Two example projects include:

- **CLOSE TO HOME**

This well-attended exhibit organized by a UVA student highlighted works of art focused on natural environments that are under threat from climate change. Held at High Tor Gear Exchange, which promotes a circular economy for outdoors recreation gear, the event featured the Community Climate Collaborative discussing strategies to tackle climate change and the disproportionate impacts of climate change on communities of color.

- **BIKE REPAIR CLINICS**

UVA student volunteers assisted Charlottesville Community Bikes, Safe Routes to School and other local groups with this Mobile Clinic program providing access to bicycle repair services and safety education. The program promotes cycling as an affordable means of reliable and sustainable transportation and a form of exercise.



“ Youth-based programs led by organizations like Cultivate Charlottesville and the Community Climate Collaborative also have the creative imagination and the data to be able to understand the problem and produce a just response. We have it all, it is just a matter of local stakeholders taking the steps necessary to animate that response.

Michael Salgueiro, Research Programs Manager at The Equity Center.



ENGAGE BEYOND GROUNDS

PARTNERSHIPS

OFS continued to **collaborate with other institutions** through UVA's partnership with William & Mary College, the Virginia Association for the Advancement of Sustainability in Higher Education and the Ivy+/Listening Post networks. Schools shared best practices for reducing single-use plastics, climate action planning, equity education and more.

Through Climate Action Together, UVA continued to partner with the City of Charlottesville and Albemarle County to coordinate on outreach and engagement on each other's climate action planning, participating in joint workshops, presentations and events.

The **Green Athletics** group had staff and student-athlete representatives on the ACC Sports Sustainability Team. This year, the team developed a mission statement and launched a website and is now developing case studies from each school to share lessons learned and best practices.



A colorful poster for an event titled "Charlottesville NOW & Sierra Club Piedmont Group SAVING OUR PLANET STARTING IN OUR COMMUNITY". The event is scheduled for 7pm on April 14, virtual via Zoom, focusing on local governments and university climate action goals and progress. The poster features logos for Albemarle County, Charlottesville, and the University of Virginia. It also includes the names and titles of organizers: Gabe Dayley (Albemarle County), Susan Elliott (Charlottesville), Peggy Van Yahres (Charlottesville Tree Commission Chair), and Andrea Ruedy Trimble (University of Virginia). The background is orange with a stylized tree and a person holding a globe.

EARTH DAY EVERY DAY

After two years of modified Earth Day celebrations due to the pandemic, OFS partnered with dozens of student-led groups and community organizations to host an in-person "Earth Day Every Day" series full of events, webinars, tours and more. The Sustainability team promoted more than 40 events throughout April, which culminated in the "How To Save A Planet" Eco-Fair on April 22 on the Lawn. More than 400 attendees learned easy and actionable ways to jump into climate action, engage neighbors and peers, and support community organizations at the forefront of the sustainability scene.





STEWARD

Ensuring the sustainability and longevity of UVA's built and natural environments and reducing its environmental impact to support the goals and functions of the University.

STEWARD

YEAR IN REVIEW

With more than 550 buildings spanning 18 million square feet and numerous construction projects supporting growing schools and programs, UVA's environmental footprint would continue to increase in tandem without deliberate action. UVA is reducing this impact through multiple and interconnected programs focused on reducing energy use, water consumption, waste and toxic materials.

CLIMATE ACTION

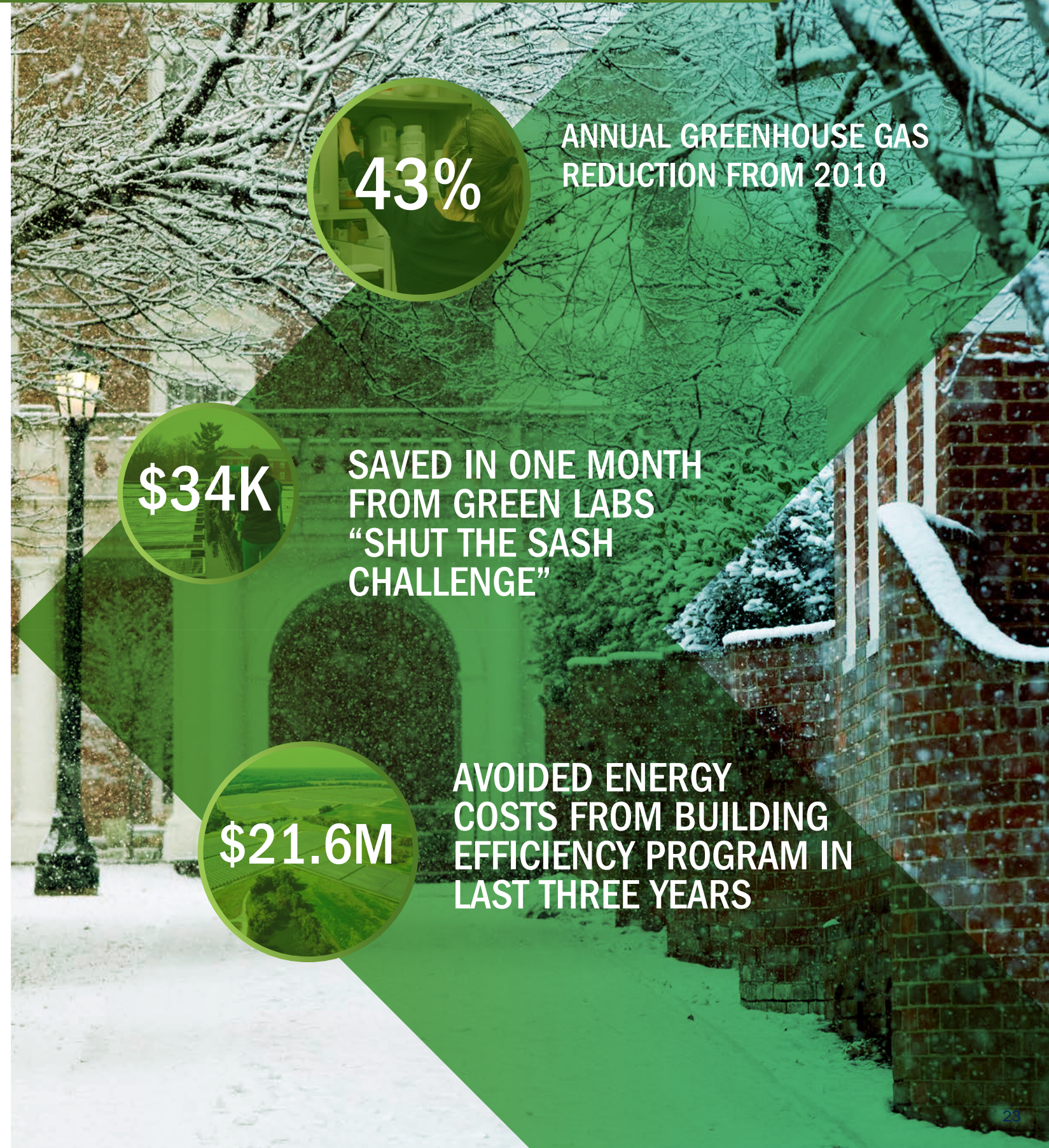
UVA recently joined the U.S. Department of Energy's Better Climate Challenge, committing to reducing Scope 1 and 2 greenhouse gas emissions (direct emissions from University activities) by 50% by 2030 without the use of offsets. This complements UVA's existing goal of carbon neutrality by 2030.

In calendar year 2010, UVA's Scope 1 and 2 emissions were 291,124 tons of carbon dioxide equivalent. * As of 2021, emissions decreased by 43.4%, to 164,747 tons.

ENERGY

UVA reduced its energy use intensity (defined as total source energy use divided by total square footage) by 25.4% between fiscal years 2010 and 2021. This goal was developed in association with the DOE's Better Buildings Challenge.

UVA is currently ranked in the top 30 (#24) in the U.S. Environmental Protection Agency's top colleges and universities for annual total green power usage, in large part because of UVA's two utility-scale solar projects (Hollyfield and Puller), as well as solar panels in six locations on Grounds.



43%

ANNUAL GREENHOUSE GAS
REDUCTION FROM 2010

\$34K

SAVED IN ONE MONTH
FROM GREEN LABS
"SHUT THE SASH
CHALLENGE"

\$21.6M

AVOIDED ENERGY
COSTS FROM BUILDING
EFFICIENCY PROGRAM IN
LAST THREE YEARS

*All metrics in the STEWARD section include the UVA Health System

STEWARD

YEAR IN REVIEW

NITROGEN

Since 2010, the baseline year for nitrogen analysis, UVA has reduced its nitrogen footprint by 84 metric tons, a **29% reduction**. Major initiatives driving the progress include an ongoing move towards plant-based food options, reductions in energy use and purchase of off-site utility scale solar energy.

MATERIALS AND WASTE

UVA has a goal to reduce its waste footprint to 70% of 2010 levels by 2030, which includes both minimizing the amount of waste generated and the amount sent to landfills. UVA has so far achieved a reduction of 38.8% of total waste generated. In calendar year 2021, the University reused/composted/recycled 35.5% of the waste generated, sending 8,417 tons of waste to landfill. This is an increase from the amount landfilled in 2010.

WATER

Since 2010, UVA has **reduced its potable water consumption** by 26.5%. In 2021, UVA consumed 422 million gallons of potable water, compared to 574 million gallons in 2010.

FOOD

UVA Dine continued to increase its **spending on sustainable products**, reaching 33% of its total food and beverage expenditures based on AASHE STARS criteria.

346K

POUNDS OF WASTE
DIVERTED FROM
LANDFILL FROM X-RAY
RECYCLING

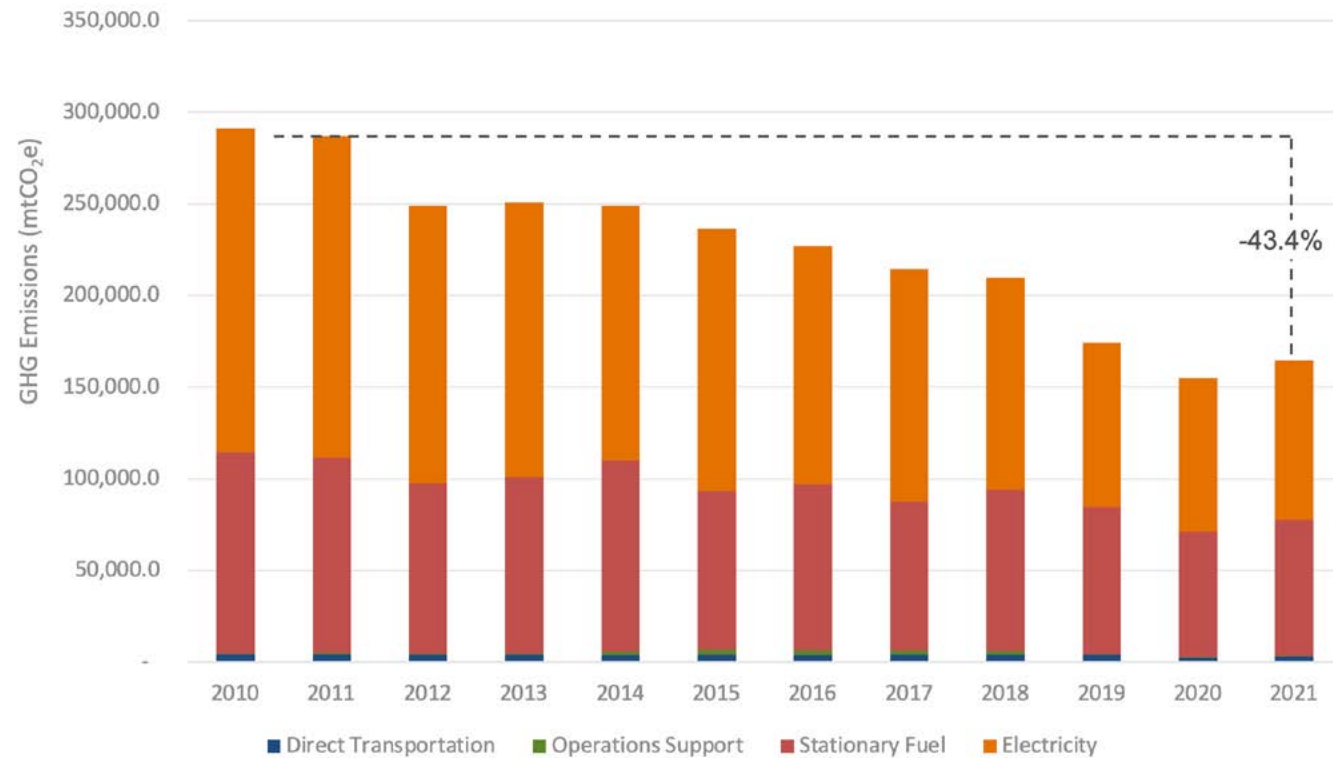
4.5M

SQUARE FEET OF
LEED-CERTIFIED
PROJECTS
ACROSS
GROUNDS

22

LOW-EMISSIONS
VEHICLES IN
FACILITIES
MANAGEMENT FLEET

GREENHOUSE GAS EMISSIONS 2010-2021



GOAL: CARBON NEUTRAL BY 2030 · FOSSIL FUEL-FREE BY 2050

CARBON NEUTRAL BY 2030

UVA is committed to carbon neutrality by 2030 and the complete elimination of fossil fuels by 2050. These ambitious goals build on a decade of climate action at UVA, which set its first greenhouse gas reduction goal in 2011. Since that time, the University has reduced Scope 1 and 2 emissions by 43% from 2010.

UVA's next decade of climate action is currently taking shape. Over the past year, stakeholders from across the University have come together to support two complementary initiatives – **development of the UVA 2030 Climate Action Plan** and support of a long-term Strategic Thermal Energy Study. The former is focused on laying out a roadmap for the University to achieve its 2030 carbon-neutrality goal. The latter is a longer-term analysis focused on eliminating fossil fuels within UVA's district energy systems. Both initiatives draw heavily from the University's body of expertise, benefitting from strong interest and support from students, faculty and staff.



SUSTAINABLE VEHICLES

UVA's Facilities Management Fleet Team has accelerated its climate action leadership. Over the past several years, the team has procured 22 low-emissions vehicles with seven more due to arrive soon. Additional innovations related to driver training and telematics has seen UVA's FM Fleet emerge as a leader and one of the greenest fleets in the country as recognized by the annual Green Fleet Awards.

Additionally, UVA's Parking & Transportation Department has **purchased four battery electric buses** for its transit system, a key first step in eventually transitioning its entire fleet away from diesel fuel. The new buses, which are due on Grounds in the fall of 2023, are an important step towards decarbonizing UVA's fleet.

BUILDING EFFICIENCY PROGRAM

UVA continues to enhance the energy efficiency of its building portfolio through a suite of initiatives. UVA's Building Efficiency Program (formerly known as "Delta Force"), composed of an internal team of Office for Sustainability (OFS) engineers and Facilities Management staff, provides energy retrofits for existing buildings at no upfront cost. Over the past three years, the program has invested \$6.3 million in new energy efficiency projects on Grounds. With over 10 years of similar investments, this program has achieved **\$21.6 million in energy cost savings in the past three years**. Typical projects include upgrades from pneumatic controls to direct digital controls, LED lighting upgrades, ventilation optimization and HVAC scheduling. These projects also result in improved lighting quality, indoor air quality and comfort for the occupants.

DOE BETTER BUILDINGS CHALLENGE

As part of the U.S. Department of Energy's Better Buildings Challenge, UVA has **steadily reduced its source energy use intensity** since 2010. The metric tracks how much energy UVA uses per square foot of building space, including the amount of energy necessary to produce and transport electricity and natural gas to Grounds. UVA's goal is to reduce its average source energy use intensity by 20% (compared to 2010) across more than 400 buildings. With the majority of operations returning to normal in 2022, UVA is well-positioned to meet its Better Buildings Challenge goal.

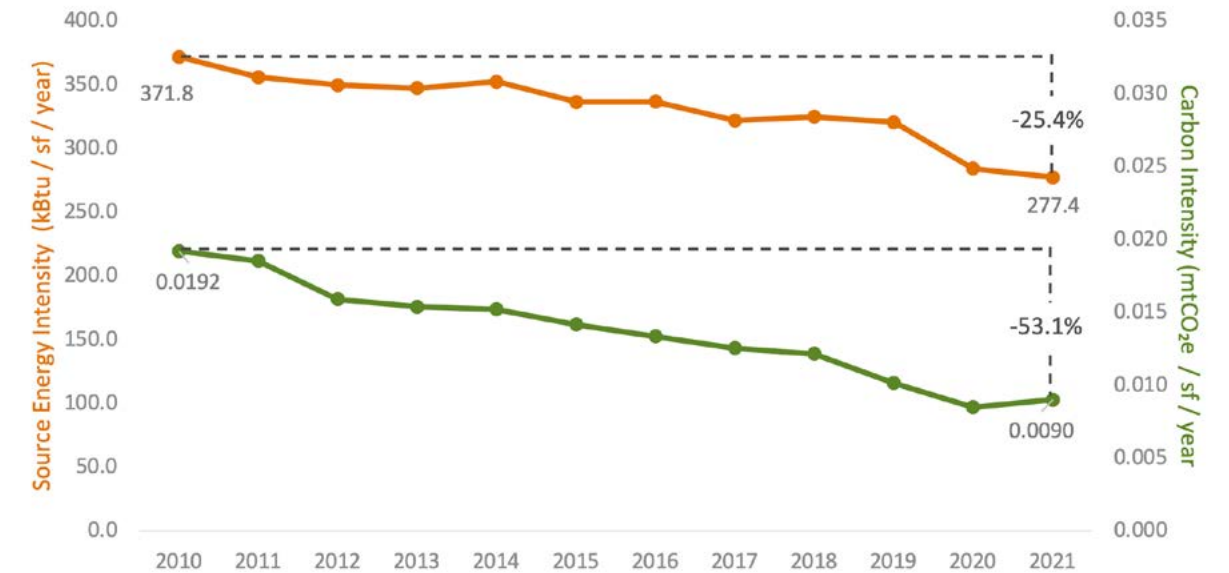


[UVA is] on track to meet [its] energy savings target and achieve meaningful energy cost savings across [its] building portfolio. We value your exemplary leadership and willingness to share your successful energy efficiency strategies and solutions with the market.

Maria T. Vargas,
Director Better Buildings Initiative, U.S.
Department of Energy



ENERGY USE INTENSITY 2010-2021



**GOAL: REDUCE BUILDING ENERGY USE INTENSITY
20% BELOW 2010 LEVELS BY 2023**

STEWARD ENERGY



SUSTAINABLE LABS PROGRAM

Laboratories are responsible for one third of UVA's energy consumption, and OFS has invested in a program that is proportional to the size of this challenge. Launched in 2022, the Sustainable Labs Program expands and integrates the Green Labs and Smart Labs programs in UVA lab buildings, featuring lab ventilation risk assessments, retro-commissioning and tailored outreach and engagement that **directly support researchers to undertake sustainability initiatives.**

The Sustainable Labs team kicked off the School of Medicine's first Smart Labs building, MR-4. In addition to LED lighting and HVAC controls upgrades, a ventilation assessment was completed to identify the safest and most efficient airflow specifications for individual laboratories. Green Labs also provided freezer inventories, unit condition assessments and defrosting services to the building's ultra-low and standard cold storage units, encouraging preventative maintenance of existing units.

SHUT THE SASH CHALLENGE

The Shut the Sash Challenge was hosted in October 2021 by the Green Labs Program to support safe and efficient use of chemical fume hoods. Over 20 labs participated, with four chemistry labs **saving an estimated combined \$34,000 in one month**, thanks to targeted campaigns encouraging researchers to shut their fume hood sashes. This simple action keeps researchers safe from chemical exposure risks and yields significant energy savings.

GREEN LABS WORKING GROUP

During the 2021-2022 academic year, the Green Labs Working Group created a cold storage decision tree to help **prevent overuse of energy-intensive lab freezers.** The tool supports researchers at UVA and beyond, identifying and disposing of unneeded lab samples to improve the space efficiency of their freezers.

SOLAR FARM SITE VISIT

Staff from UVA Facilities Management and students from the Darden School of Business toured the 17-megawatt Hollyfield Solar Facility in King William County in April. Together with the 15-megawatt Puller Solar Facility in Middlesex County, these two projects produce **carbon-free electricity** to meet 20% of the University's annual needs.



DISTRICT ENERGY AWARD

At the 2021 meeting of the International District Energy Association, UVA received the coveted **IDEA Innovation Award**, which recognizes ingenuity in environmental and economic sustainability. The award was in commendation of UVA's pursuit of novel techniques to enhance chilled-water plant energy efficiency, which supports UVA's 2030 sustainability goals while reducing operating costs.

STRATEGIC THERMAL ENERGY STUDY

UVA is in the midst of a multiyear Strategic Thermal Energy Study that will provide a holistic framework for supporting the University's carbon-neutral and fossil fuel-free goals. The study is led by a multidisciplinary team of experts who have enlisted the support of stakeholders from around the University to develop a **long-term plan to decarbonize UVA's energy systems** while enhancing resiliency.

STEWARD

NITROGEN

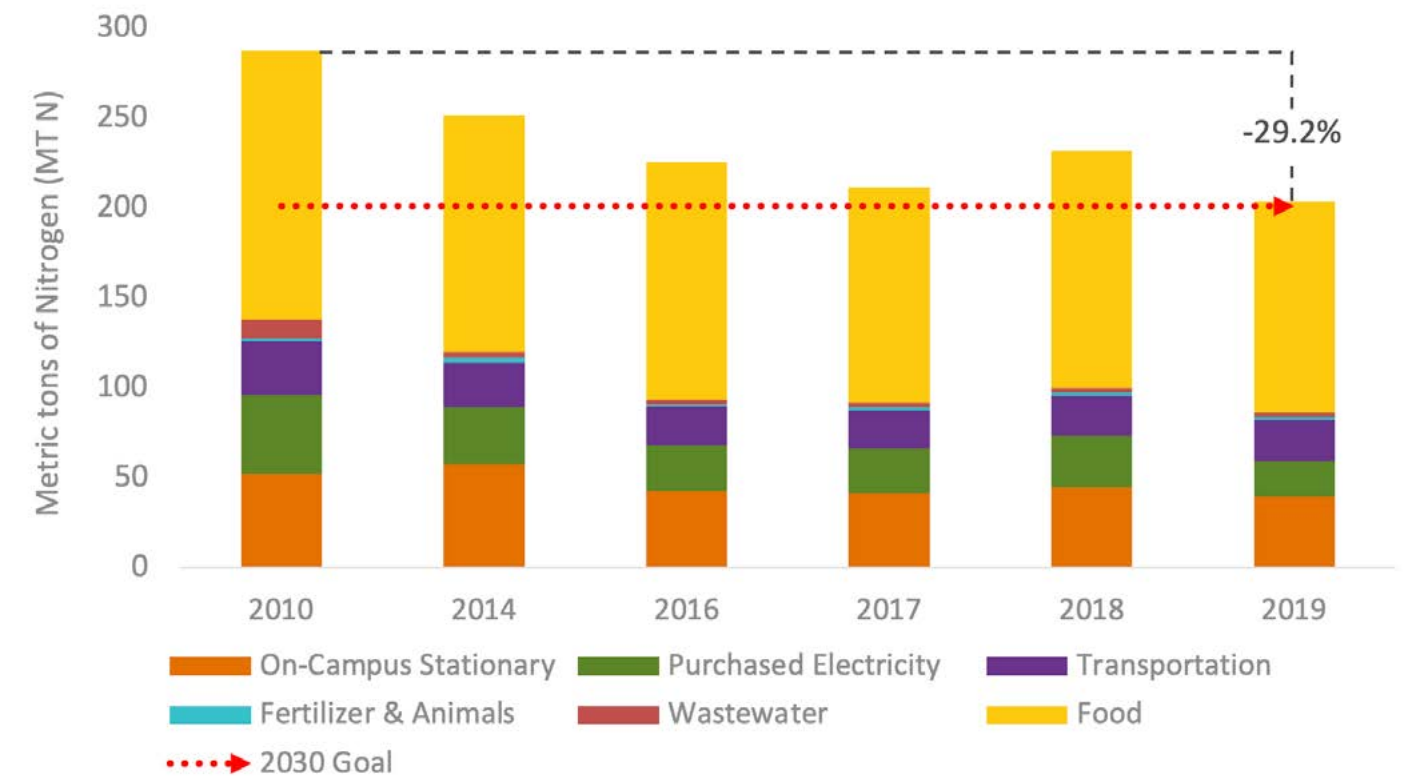
NITROGEN FOOTPRINT

The Nitrogen Working Group has continued to pursue initiatives to track and assess reduction opportunities. The team has added 2018 and 2019 food data to the nitrogen calculations. The figure below shows UVA's nitrogen footprint from 2010 to 2019. The stacked colored bars represent the emission sources and the dashed line tracks **progress towards a 30% reduction goal by 2030**. In terms of helping reduce nitrogen, the Working Group has developed scenarios and improved tools to test reduction options. Additionally, they performed outreach to UVA students and the broader Charlottesville and Albemarle County community on nitrogen reduction and management.



NITROGEN FOOTPRINT

2010-2019



**GOAL: REDUCE NITROGEN LOSSES TO THE ENVIRONMENT
30% BELOW 2010 LEVELS BY 2030**

STEWARDSHIP

MATERIALS & WASTE

REDUCTION IN SINGLE-USE PLASTICS

Starting in July 2021, UVA prohibited the purchase, distribution or sale of certain single-use plastics, specifically, plastic and polystyrene food service containers, straws and cutlery, water bottles and shopping bags. UVA formed a working group, led by OFS and including more than 40 representatives from across the University, which implemented a robust communications strategy to ensure **transition to compostable and reusable materials** and other options. Students, staff, faculty, community members, vendors and local caterers have received ample training and information to help UVA reduce single-use plastic waste.

UVA has a goal to reduce its waste footprint to 70% of 2010 levels by 2030, which includes both minimizing the amount of waste generated and the amount sent to landfills. UVA has so far achieved a reduction of 38.8% of total waste generated. In calendar year 2021, the University reused/composted/recycled 35.5% of the waste generated, sending 8,417 tons of waste to landfill. As this is an increase from the amount landfilled in 2010, OFS and its partners continue to identify innovative solutions to reducing this material.



COMPOSTING PILOTS

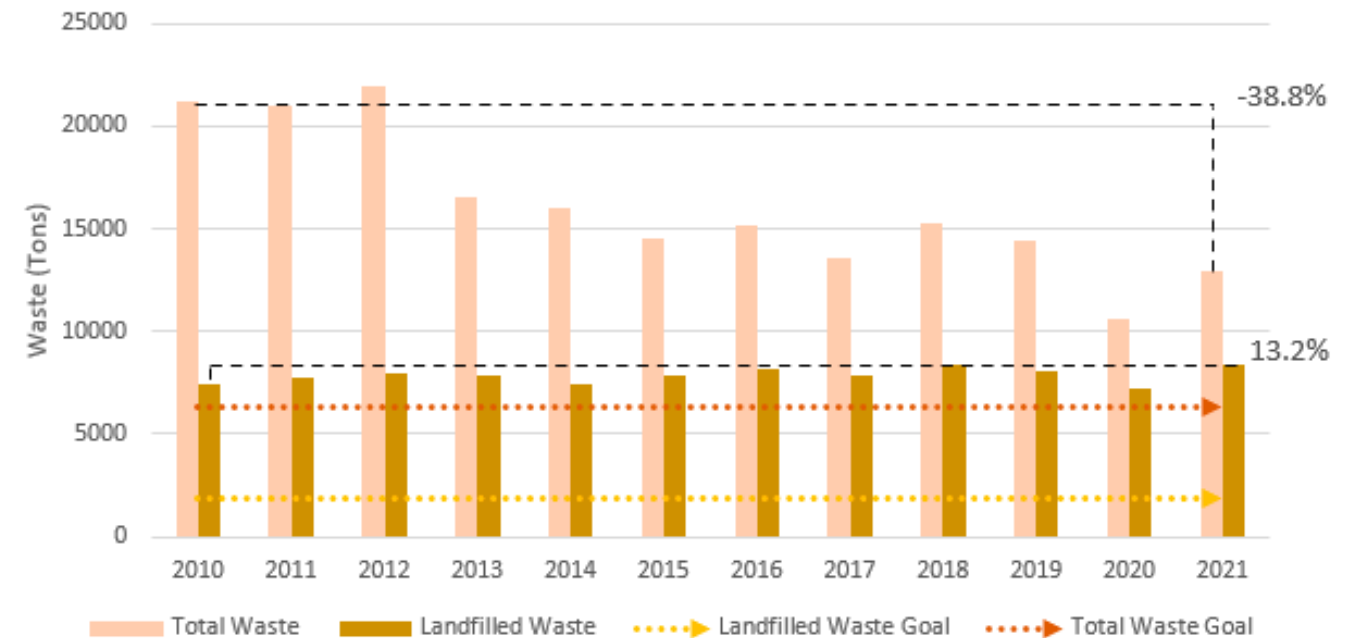
UVA piloted compost bins at the Amphitheater and Palmer Park to increase diversion of waste from the landfill and to capture the increase in compostable serviceware provided by dining halls, food trucks and concessions.

At the Amphitheater, a test of a single compost bin expanded to a fleet of rotating bins in response to the significant quantity of compost being collected. The key to success was the support from the Zero Waste student ambassadors who sorted the material in the bins and removed non-compostable items. Palmer Park, a LEED Silver certified softball stadium, piloted a full season of composting with bins on the concourse and at concessions stands, as well as ample communications including signs, PA announcements and graphics on the big screen. The result was **320 pounds of waste diverted from the landfill.**

X-RAY RECYCLING

UVA Health staff identified an opportunity to **recycle outdated X-rays** recouping \$142,000 for the Health System by recovering the silver in the X-rays and diverting 289,215 pounds of waste from the landfill. A second phase of X-ray recycling diverted another 56,663 pounds from the landfill.

WASTE LANDFILLED 2010-2021



GOAL: REDUCE WASTE TO 30% OF 2010 TOTALS BY 2030 (A 70% REDUCTION)

STEWARD WATER

BETA BRIDGE STREAM CLEAN-UP

After a two-year hiatus due to the pandemic, the Clean Water Working Group partnered with OFS to host the Annual Beta Bridge Clean-Up once again, which took place in April 2022. This year's clean-up was an "Earth Day Every Day" event, in which participants were able to celebrate Earth Day through an act of stewardship. The **hard work of 40 volunteers**, which included students, staff and community members, made the return of the event a true success. The North Grounds Landscaping team helped haul and properly dispose of more than a truck bed full of trash and recycling.



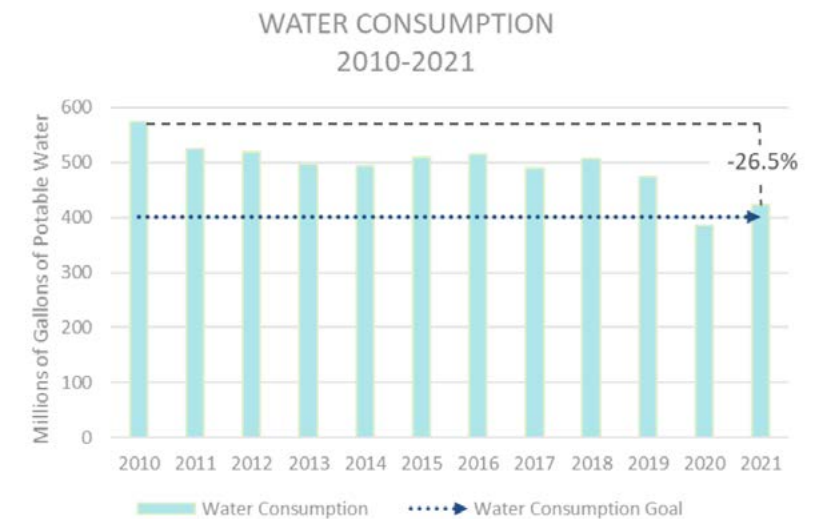
UNIVERSITY HOSPITAL WATER RECLAMATION

The University Hospital's new South Tower, certified LEED Silver, was designed to **recycle water for UVA's district energy system**. Rainwater from the roof and condenser water from the HVAC system (both typically drained to the sewer) is collected in a 50,000-gallon cistern, which is connected to the nearby chiller plant that can draw water from the cistern as needed.



RIVANNA RIVER ROUND-UP

In September 2021, the Clean Water Working Group volunteered with community members to **clean up a section of Pollocks Branch**, south of Grounds. This effort was part of the Annual Rivanna River Round-Up event, hosted by the Rivanna Conservation Alliance, to clean up litter throughout the watershed. Members of the working group removed various plastics and trash that harm wildlife, contaminate drinking water and make recreation less safe.



STEWARD FOOD

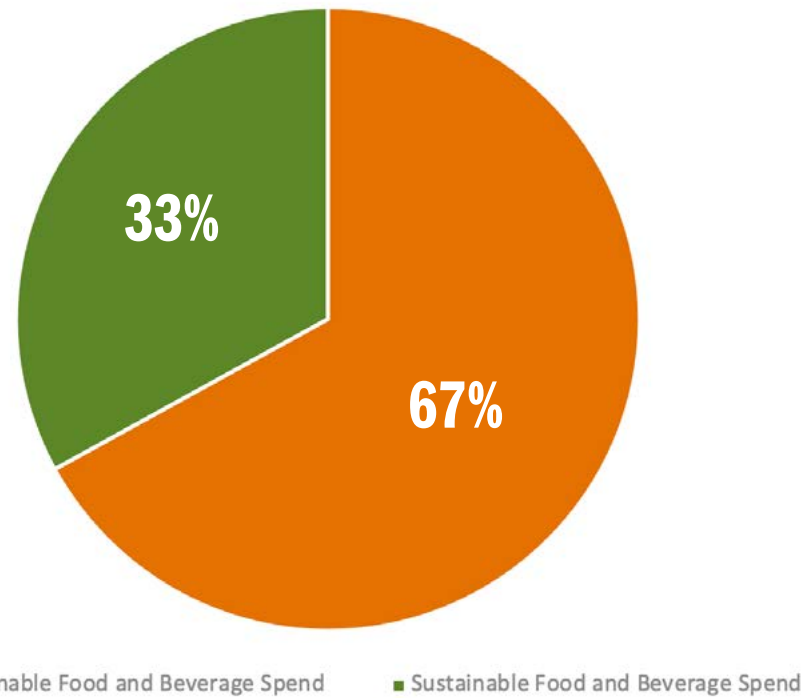
SUSTAINABLE FOOD COLLABORATIVE

The Sustainable Food Collaborative, which represents stakeholders from UVA and the local community, has continued to advance its goals at the University, including **increasing the proportion of UVA's food budget spent on sustainable food** and educating students to increase the demand for sustainable food at UVA.

UVA DINE

- UVA Dine piloted “Cool Food Meals” in O’Hill and Fresh Food Company dining rooms, an innovative program through which the World Resources Institute helps identify and market meals that are better for the climate. Based on one’s diet, a daily carbon footprint is recommended, measured from “farm to fork,” to have a low impact on the climate.
- In April 2022, UVA Dine released a new **Guide to Eating Plant-Based on Grounds**. The guide walks students through the diversity of plant-based options that they have access to on a meal plan as well as nutritional tips and the environmental benefits of eating plant-based food.

UVA DINE'S 2021 TOTAL PURCHASES



GOAL: INCREASE SUSTAINABLE FOOD TO 30% BY COST BY 2030



STEWARD

LAND & BUILDINGS

GREENING GROUNDS

The Facilities Management Landscaping Services team strives to be more sustainable in their approach to maintaining UVA Grounds in many ways. Rich Hopkins, Associate Director of Grounds, says new initiatives resulting from UVA's Bee Campus certification are “a big leap forward in our sustainability efforts.” For example, the team fosters a more **diverse collection of plants on lawns**, such as clover and dandelion. This diversity not only provides the necessary resources for pollinators, but also reduces the need for chemical weed control which protects the environment, the landscaping staff and the public.



REUSING FELLED TREES

Another recent project has been partnering with a student organization to mill trees being removed from Grounds into usable lumber. The intent is to have the felled tree continue to **provide a benefit to students**, either as raw material for student projects, furniture built by the Facilities Management cabinet shop, or being incorporated into a construction project. Trees that are not milled are ground into mulch, which is applied on Grounds to slow evaporation and reduce the weed population, saving on the frequency and the amount of water and herbicide needed to maintain the landscape.

BUILDING CERTIFICATIONS AND GUIDELINES

In 2022, UVA updated its Facility Design Guidelines and Green Building Standards to support the 2030 sustainability goals. These updates include requirements for prohibiting on-site combustion of fossil fuels and a phase-out of existing fossil fuel infrastructure in support of UVA's fossil fuel-free goal. Additionally, new buildings and major renovations are required to meet high performance, low-energy targets.

LEED CERTIFICATIONS

UVA has **78 LEED certified projects** representing over 4.5 million square feet of building area, and another dozen projects currently pursuing LEED certification. In the past year, Palmer Park and the University Hospital's new South Tower have both achieved LEED Silver status, representing unique and impressive achievements for athletic and healthcare facilities.

“The South Tower is a great example of the intersection of energy efficient building practices and thoughtful architectural and engineering design that resulted in the creation an outstanding and sustainable built environment for patients and staff.

- Kevin Fox,
Director of UVA Medical Center Facilities Planning & Capital Development

DISCOVER

Fostering critical thinking and innovative solutions to global and local sustainability challenges through interdisciplinary and inclusive teaching and research.

DISCOVER

YEAR IN REVIEW

Although the pandemic still affected much of university life and operations when students returned to Grounds for the 2021-2022 academic year, most of the teaching and research activities resumed safely. This section covers just a few examples of how UVA instructors, researchers, students, and community partners continued to discover and implement solutions for our shared planet. In sustainability-related teaching and research, three themes were evident this year: sustainability grew in prominence and priority, momentum built on climate and health topics, and strategic relationships were fostered.

GROWING IN PROMINENCE AND PRIORITY

As global experts continue to confirm the urgency with which we must address climate change, UVA leadership has been listening. This year, major investments, communications coverage, and high-level collaborations made it clear that **sustainability-related teaching and research** is a growing priority at the University. Students are also listening. Compared to even just a few years ago, a growing number of UVA students are prioritizing courses and majors that will equip them to be leaders in addressing the global environmental and social challenges of their generation.

BUILDING MOMENTUM ON CLIMATE AND HEALTH

While students and scholars in all disciplines have their role to play in the sustainability realm, the growth in academic endeavors at the **intersection of climate change and health has been particularly important**. Clinicians at UVA Health are re-envisioning preventative care to include planetary care and bringing that ethos to their practice, their students, their publications, and their advocacy. Medical and Nursing students are also helping transform health care practice and curriculum for the sake of both the environment and patients worldwide, including those being treated at UVA.

SUSTAINING RELATIONSHIPS

Many academic partnerships formed pre-COVID were still going strong throughout the 2021-2022 academic year. **Building relationships for the long-term** has benefited faculty, staff, and students, especially for Grounds-engaged learning courses and projects. Many initiatives have been strengthened even through these tough COVID years, and they will continue to grow and evolve into the future.

16 EXPERIENTIAL LEARNING PROJECTS SUPPORTED BY ERI

25 STUDENTS ENROLLED IN FIRST-EVER SUSTAINABILITY ELECTIVE IN SCHOOL OF MEDICINE

40 PARTICIPANTS IN ERI FELLOWSHIPS, INTERNSHIPS AND EXTERNSHIPS

55 GRADUATES IN CLASS OF '22 WITH SUSTAINABILITY-RELATED MAJORS

100 NEW CASES, ARTICLES AND COURSES PLANNED AT DARDEN

\$60 million TO BE INVESTED IN SUSTAINABILITY RESEARCH

DISCOVER RESEARCH

The Environmental Resilience Institute (ERI) supports transdisciplinary research and training at the intersection of environmental change and human well-being. ERI's programs accelerate discoveries, link research with action, and train the next generation of leaders. Current priorities are climate restoration, coastal resilience and water futures.



ON-GOING PROGRAMS

ERI's Graduate Summer Fellows, Intern and Extern programs have **grown to over 100 students engaged in interdisciplinary research** to date. ERI also expanded experiential learning opportunities to 16 student projects led by alumni and community partners. ERI's interdisciplinary teams, dubbed "CoLabs," continue to integrate natural science with the humanities to address timely environmental and sustainability topics. Also this year, ERI released a report of findings from its Climate Restoration Initiative with support from the Jefferson Trust.

COASTAL FUTURES HUB

An interdisciplinary multi-institutional team led by ERI was **awarded \$5 million from the National Science Foundation** to create the Coastal Futures Hub. Researchers and community residents will co-produce open-source tools to enhance decision-making around climate adaptation and resilience in rural coastal Virginia. The hub will build community capacity needed to effectively respond to saltwater intrusion from accelerated sea-level rise and more severe storm flooding.

GLOBAL-TO-LOCAL INITIATIVE

ERI researchers have partnered with the College of Arts & Sciences, the School of Data Science, and the School of Engineering and Applied Science on an initiative bridging global-scale climate dynamics with regional/local processes and systems to guide **decision-making for equitable climate resilience** and sustainability outcomes.

The Global-to-Local (G2C) initiative was funded by the Prominence-to-Preeminence STEM Targeted Initiatives Fund. It is designed specifically to recruit and support a highly qualified and diverse group of postdoctoral fellows who will work as a cohort to bring the technological skills needed to **bridge global-scale modeling and regional/local-scale observations** to address climate solutions. The initiative will recruit and retain three new diverse faculty from the postdoctoral fellow program and beyond to enhance UVA's research capacity.

GRAND CHALLENGES FORUM

ERI hosted the **Environmental Resilience and Sustainability Grand Challenges Research Forum** in partnership with the Offices of the Provost and the Vice President for Research. The event kicked off a University-wide discussion to identify potential areas of focus intended to invest \$60 million in environmental resilience and sustainability research.

ERI also hosted the **Climate Ambition Summit**, which brought together UVA researchers, leading global experts, university leaders, and the broader UVA community to explore how UVA can rise to the challenge of climate change and play a leading role in discovering climate solutions. More than 3,000 people registered for the event series.

DISCOVER

ACADEMIC OUTREACH

CREATIVE AVENUES FOR ACADEMIC OUTREACH

Most faculty balance teaching and research, but many **go above-and-beyond** to engage their peers and students, as well as the global community in sustainability topics through unique channels:

- The Biomaterial Building Expo (Professors MacDonald and Schumann, Architecture) and Picturing Climate Justice Exhibit (Professor Michelle Claibourn, Equity Center) engaged learners through physical installations in spring 2022.
- Students working with the Repair Lab created the “Main Street Speaks” podcast and UVA Law Professor Mike Livermore produced “Free Range” with over 20 episodes and hundreds of listeners.
- Faculty at the School of Nursing and School of Medicine (Pamela Cipriano, PhD, RN and Matthew Meyer, MD) penned op-eds in major publications on the environmental impact of health care operations and the imperative to “do no harm” by mitigating health care’s contributions to climate change.

CLIMATE AND HEALTH CONFERENCE

The School of Nursing hosted its **2nd annual conference on climate change and health**. This state-wide gathering of experts provided professional development to over 100 clinician participants and enabled dialog about UVA Health’s role in both treating and preventing the consequences of environmental hazards.

ENGAGEMENT AT MORVEN FARM

Six UVA faculty received funding support for **creative sustainability projects at Morven Farm**. Projects included student-led sustainability consulting, a study on food choices, an exploration of biodiversity as a means of pest control, and a pilot of innovative “agro-infrastructure” at the Morven Kitchen Garden.



SUMMER DECARBONIZATION ACADEMY

UVA launched this new **hands-on learning experience** for rising third- and fourth-years and graduate students. Participants are completing a hands-on, individual learning project and group-based learning activities, all geared to UVA’s goals of being carbon-neutral by 2030 and fossil fuel-free by 2050.

DISCOVER CURRICULUM

SUSTAINABILITY-RELATED MAJORS

This academic year, the Environmental Thought and Practice (ETP) academic program **grew by almost 80%** with 51 students enrolled, 13 of whom graduated in May. The number of affiliated faculty also grew to a total of 35 across 14 different departments. Also this year, ETP received a grant from the Jefferson Trust to enable the formation of teaching partnerships with “Practitioners in Real Life.”

The pan-University Global Studies major and its six tracks continues to thrive and grow. The Global Environments + Sustainability track celebrated its **largest class to date** of 42 students pursuing the major and 70 students pursuing the minor. The program offered 12 new courses, and global mentors from India, South Africa, Egypt and the Dakotah nation engaged students through courses and direct mentoring.

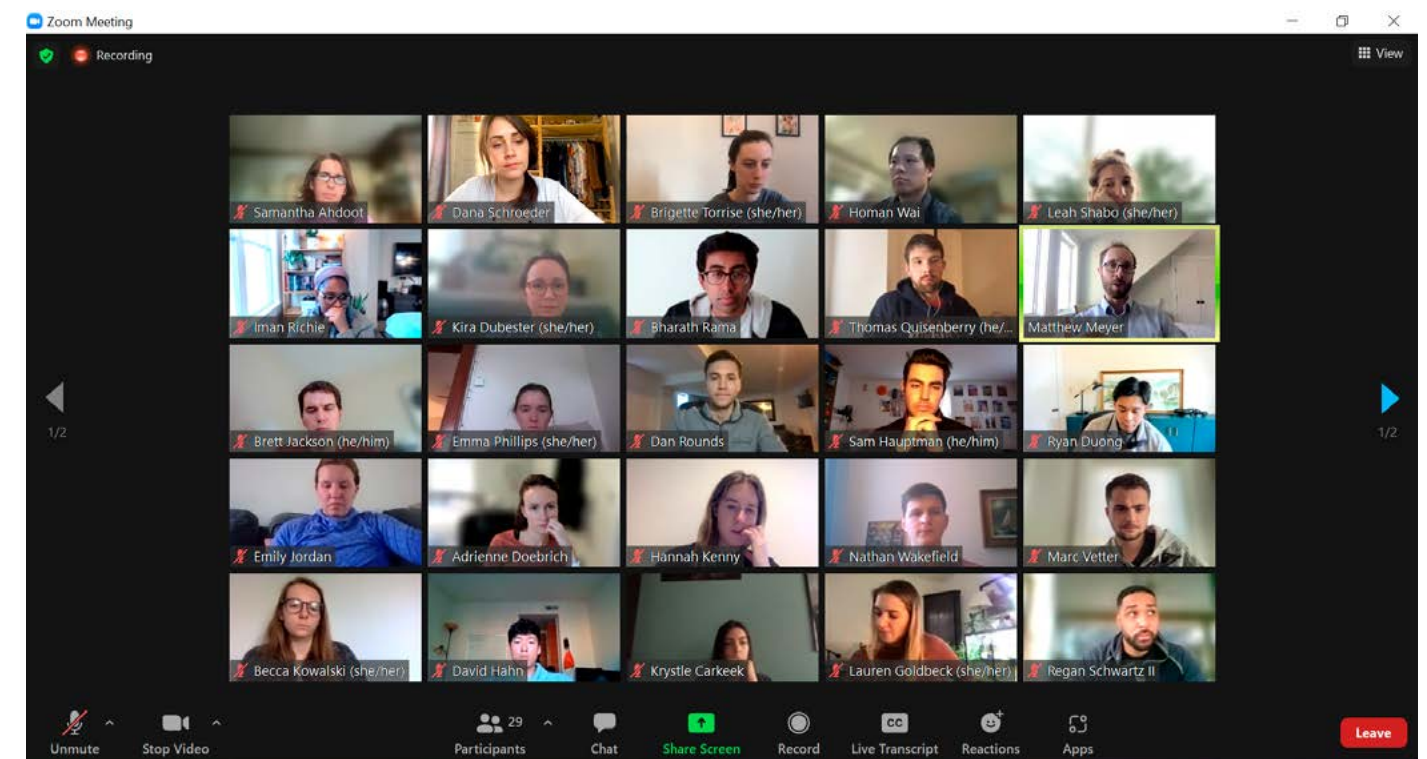


COMMITMENTS IN UNIT-LEVEL PLANNING

In April 2022, the **Darden School of Business** became UVA's first school to publish its own comprehensive sustainability plan, aligned with UVA's sustainability goals. In the section “Goals for How We Learn,” Darden stated its intention to develop 100 new teaching cases, publish 100 new articles, and deliver 100 courses – all on sustainability topics. Reaching these milestones will build on an already strong foundation for shaping ethical, socially- and environmentally minded leaders at Darden.

SCHOOL OF MEDICINE COURSE OFFERINGS

Initiated by a cohort of hardworking medical and nursing students, **UVA's first Planetary Health Report Card** identified opportunities to strengthen environmental curricular offerings in the School of Medicine. Continuing this work into 2022, students helped co-create a new SOM elective called “Climate Change and Health” supervised by Dr. Homan Wai and Dr. Samantha Ahdoot. The two-week intensive course was offered in January with over 25 students enrolled, and over 15 guest speakers helping equip physicians-in-training with the tools to provide more effective and informed care and advocacy in an ever-changing world.



DISCOVER

GROUNDS-ENGAGED LEARNING



FOOD JUSTICE

Dr. Kate Stephenson’s “Food Justice” writing seminar provided 14 students an opportunity to explore the **intersection of food equity and community involvement**. As a main component of the class, students participated in weekly volunteer sessions with organizations addressing food insecurity in Charlottesville. Eight volunteers supported UVA’s Student Garden through regular watering and harvesting, maintaining social media channels focused on food access, and creating new signs in the garden space that emphasize the “Pick Your Own” nature of the space.

SYSTEMS ENGINEERING

The Accelerated Master’s Program in Systems Engineering’s capstone project for 2022 provided **recommendations on carbon offsets and renewable energy certificates (RECs)**. Teams were tasked with generating a portfolio of offsets and RECs based on different factors such as permanence, cost and proximity to be considered if UVA needs to purchase offsets or RECs in the future. Using systems analysis methodologies and techniques, students examined market conditions, industry trends, stakeholder interests, risk and uncertainty associated with institutional procurement of carbon offsets. These portfolio recommendations will help inform the University on the best path to offset emissions that otherwise cannot be avoided.

DESIGN FOR A SUSTAINABLE WORLD

In both Fall 2021 and Spring 2022, Professor Ben Laugelli reshaped all sections of his “Engineering and Society” course to focus on sustainability. Hundreds of students heard guest presentations from the Office for Sustainability, and their final projects involved **proposing design solutions** that would both help UVA achieve our Sustainability Goals and support global attainment of the UN Sustainable Development Goals.

WRITE CLIMATE

Since 2018, the Write Climate courses inspired by Professor Deborah Lawrence have offered UVA students an opportunity to **engage with community members and create art** to encourage climate action. In spring 2022, Write Climate: Art & Engagement, taught by Amanda Nelsen and Andrea Trimble, students solicited postcard submissions from their peers with the prompt, “Dear Local Leader, Climate change makes me feel _____. I care about our place and am particularly concerned about _____.” The completed postcards were stitched together into a scenic tapestry that was displayed on Monroe Hill, carried through Grounds and down Main Street, and ultimately delivered to members of Charlottesville City Council and Albemarle County Board of Supervisors in May.



SUSTAINABILITY

RECENT RECOGNITION



AASHE STARS – GOLD

PRINCETON REVIEW GUIDE TO GREEN COLLEGES 2022

BEE CAMPUS USA CERTIFICATION
XERES SOCIETY

*Green Fleet Award, National Association
of Fleet Administrators*

TREE CAMPUS USA, ARBOR DAY FOUNDATION

*Governor's Award for Environmental Excellence
2022 – Waste Minimization*

**LEAGUE OF AMERICAN BICYCLISTS BICYCLE FRIENDLY
UNIVERSITY – SILVER**

*EPA GREEN POWER PARTNER 2022 –
TOP 30 IN U.S. HIGHER EDUCATION*

**APPA 2022 Award and NAFA “Best Special Project”
Award – UVA Mindful Driving Program**

2021 IDEA INNOVATION AWARD,
INDUSTRIAL DISTRICT ENERGY ASSOCIATION



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From the Grounds Up

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