



OUR COMMON AGENDA

2023 ENVIRONMENTAL BRIEFING BOOK

a publication of Virginia Conservation Network



701 East Franklin Street, Suite #800
Richmond, VA 23219
vcn@vcnva.org
804.644.0283
vcnva.org

OUR COMMON AGENDA: 2023 ENVIRONMENTAL BRIEFING BOOK

*A publication of the
Virginia Conservation Network*

Our Common Agenda is written by, vetted through, and voted on by the 150+ Network Partners of the Virginia Conservation Network. *Our Common Agenda* represents the collaborative policy goals of more than 150 organizations across Virginia. This briefing book is intended to be used as an educational guide for policy makers and advocates to address the environmental problems facing Virginia with state-based policy solutions.

© 2022 Virginia Conservation Network

All rights reserved.

To request permissions, contact the publisher at admin@vcnva.org.

Book Design by Nicole Duimstra

Cover Photo by Andre Eanes

Equity Review by Erin Burch, Karen Campblin, Bethany Carlos, Mariah Davis, Sheddie Gonzalez-Castillo, Tyneshia Griffin, Victoria Higgins, Mary Koik, Grace Tucker, & Rowena Zimmerman

Printed by Zoom Printing in Richmond, Virginia

Published by Virginia Conservation Network

701 E Franklin Street, Suite 800

Richmond, Va 23219

www.vcnva.org

2022 BOARD OF DIRECTORS

EXECUTIVE COMMITTEE

Karen Forget
Kendyl Crawford
Chris Miller
Clarence Tong
Cale Jaffe

BOARD MEMBERS

Pamela Bingham
Jeanette Cadwallender
Karen Campblin
Elizabeth Christeller
Will Cleveland
Daryl Downing
John Eustis
Roberta Kellam
Stewart Schwartz
Calandra Waters Lake
Kate Wofford

ABOUT VCN

Founded as the Conservation Council of Virginia in 1969, Virginia Conservation Network (VCN) began as a roundtable of major conservation groups and has grown to include over 150 Network Partners across the Commonwealth. VCN is committed to building a powerful, diverse, and highly-coordinated conservation movement focused on protecting our Commonwealth's natural resources.

VCN is a facilitator of strategic action, a resource for Network Partners statewide, and a constant conservation presence in Virginia's Capitol. Playing a unique role in Virginia's conservation community, VCN helps the community speak with one coordinated voice. The organization and its staff focus on strengthening the conservation community as a whole and winning environmental victories that benefit all Virginians.

VCN's Network Partners work on a wide range of issues from stream restoration, to transportation reform, to renewable energy advancement, to promoting sustainable community growth, to environmental justice and more. Given the diverse work of our partner organizations, VCN organizes its programs into four main categories: **WATER, LAND & WILDLIFE CONSERVATION, CLIMATE & ENERGY, and LAND USE AND TRANSPORTATION.**

VCN is proud to serve as the state lead for the Choose Clean Water Coalition, the regional coalition advocating for clean rivers and streams in communities throughout the Chesapeake Bay Watershed; as the Virginia state affiliate for the National Wildlife Federation; and as a member of the Virginia Environmental Justice Collaborative.

VCN IS A PROUD MEMBER PARTNER OF THE FOLLOWING ORGANIZATIONS:



ABOUT VCN	iv
TABLE OF CONTENTS	v
OUR 2023 COMMON AGENDA PHOTO CONTEST WINNER	vii
HOW THE BRIEFING BOOK GETS DRAFTED	viii
A MESSAGE FROM THE EXECUTIVE DIRECTOR	x

1 CLEAN WATER & FLOOD RESILIENCE 1

CLEAN WATER EXECUTIVE SUMMARIES AND CONTACT INFORMATION	3
CLEANING UP POLLUTED STORMWATER RUNOFF	5
WORKING WITH FARMERS TO PROTECT LOCAL WATERS	7
INVESTING IN WASTEWATER INFRASTRUCTURE NEEDS	9
PROTECTING THE ALBEMARLE-PAMLICO WATERSHED	11
PLASTIC & TOXIC WASTE EXECUTIVE SUMMARIES AND CONTACT INFORMATION	13
REDUCING PLASTIC POLLUTION	15
STOPPING CHEMICAL, PLASTICS, & FOSSIL FUEL INDUSTRY GREENWASHING	17
TACKLING TOXIC POLLUTANTS	19
FLOOD & CLIMATE RESILIENCY EXECUTIVE SUMMARIES AND CONTACT INFORMATION	21
ADDRESSING STATEWIDE FLOOD RISK EQUITABLY	23
SEQUESTERING CARBON THROUGH OUR NATURAL RESOURCES	25

2 LAND & WILDLIFE CONSERVATION 27

LAND CONSERVATION & OUTDOOR RECREATION EXECUTIVE SUMMARIES & CONTACT INFORMATION	29
INVESTING IN VIRGINIA'S HERITAGE & FUTURE	31
ENSURING CONSISTENT SUPPORT FOR TRAILS & PARKS	33
PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE	35
PROTECTING HISTORIC & CULTURAL RESOURCES	37
SUPPORTING LASTING FUNDING FOR LAND CONSERVATION	39
VIRGINIA'S FLORA & FAUNA EXECUTIVE SUMMARIES & CONTACT INFORMATION	41
INCREASING INVESTMENT IN TREES	43
INVESTING IN WILDLIFE CROSSINGS & HABITAT CONNECTIVITY	45
EXPEDITING THE OYSTER'S RECOVERY	47
PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS	49
BUILDING SUSTAINABLE FISHERIES	51

3 LAND USE & TRANSPORTATION 53

LAND USE & TRANSPORTATION REFORM EXECUTIVE SUMMARIES & CONTACTS	55
TRANSFORMING TRANSPORTATION	57
BOOSTING SMART GROWTH	59
REDUCING VEHICLE POLLUTION	61
ACCELERATING TRANSPORTATION ELECTRIFICATION	63
WALKING, BIKING, & PUBLIC TRANSIT EXECUTIVE SUMMARIES & CONTACTS	65
INCREASING WALKING & BIKING	67
IMPROVING PUBLIC TRANSIT	69
EXPANDING RAIL	71

4 CLIMATE & ENERGY 73

RENEWABLE ENERGY & ENERGY EFFICIENCY EXECUTIVE SUMMARIES & CONTACT INFORMATION	75
REALIZING VIRGINIA'S CLEAN ENERGY TRANSFORMATION	77
POWERING SCHOOLS WITH LOW-COST SOLAR	79
CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY	81
ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION	83
GETTING IT RIGHT WITH UTILITY SCALE SOLAR	85
FOSSIL FUEL & MINING INFRASTRUCTURE EXECUTIVE SUMMARIES & CONTACT INFORMATION	87
PREVENTING PIPELINE HARMS	89
PROTECTING OUT WATER FROM METALS MINING	91
UTILITY ACCOUNTABILITY EXECUTIVE SUMMARIES & CONTACT INFORMATION	93
CURBING ELECTRIC UTILITIES' POLITICAL INFLUENCE	95
ENSURING ACCESS TO ESSENTIAL SERVICES	97

5 GOOD GOVERNANCE 99

ENVIRONMENTAL EQUITY EXECUTIVE SUMMARIES & CONTACT INFORMATION	101
PROMOTING ENVIRONMENTAL JUSTICE	103
EDUCATING FOR ENVIRONMENTAL LITERACY	105
CONSERVATION FUNDING SUMMARY & CONTACT INFORMATION	107
WATER, LAND, & WILDLIFE CONSERVATION BUDGET REQUESTS	109
TRANSPORTATION & CLIMATE BUDGET REQUESTS	111

ENDNOTES	113
VCN NETWORK PARTNERS	123



Pollinators on Lavender at Beliveau Farm |
Photo by Mary Hogan



OUR 2023 COMMON AGENDA PHOTO CONTEST WINNER

Due to the success of our 2022 photo contest, we increased our prize money and invited the public to vote on their favorite photos for *Our 2023 Common Agenda* photo contest in an effort to further involve the conservation community in the crafting of the publication. With more than 500 submissions from 69 photographers, the competition generated spectacular images from across the Commonwealth. This year's photo contest winner is Andre Eanes' drone photo of the James River Train Bridge in Richmond, Virginia.

Andre Eanes is a drone photographer and environmental professional from Richmond. Growing up tinkering with toy RC helicopters and exploring perspective and color in visual artforms, aerial photography later became a perfect creative outlet for him with the growing accessibility of camera drones. Andre loves documenting the beauty of nature, dramatic landscapes, and stunning architecture from a unique perspective, which melds with his passions for both conservation and design. Working in renewable energy, he plans to develop a career in environmental advocacy while continuing to capture Earth's beauty from the air.

Andre's drone photography can be found on his Instagram profile (@andre.eanes.photo).

HOW THE BRIEFING BOOK GETS DRAFTED

Our Common Agenda briefing book is written by, vetted through, and voted on by VCN's 150+ Network Partners. Here's our process for crafting our shared policy agenda:

NETWORK PARTNERS PARTICIPATE IN REGIONAL FORUMS

Each spring, VCN hosts regional forums to brief local and regional partners on what environmental policies passed and failed during the General Assembly session. This is the first opportunity for our network of more than 150 partners to highlight what local and regional conservation policy opportunities they would like prioritized in the future.

ISSUE WORKGROUPS HOST ANNUAL MEETINGS

With the ideas generated from the regional listening sessions, VCN's issue workgroups (Clean Water, Land & Wildlife Conservation, Climate & Energy, and Land Use & Transportation) discuss the feasibility of policy recommendations and decide which issues should be covered in the Briefing Book. During this process, the authors of each policy paper are also selected.

AUTHORS PUT PEN TO PAPER

The collaborative process is truly on display while co-authors craft their policy papers. Generally, anywhere from 2-4 authors work on each briefing paper and consult with VCN staff to ensure that each paper reflects policy recommendations that are both attainable and effective.

ISSUE WORKGROUPS CONDUCT EXTENSIVE REVIEWS

Once the policy papers have been drafted by authors, VCN's issue workgroups review all of the papers. Authors incorporate the workgroup's feedback to make stronger arguments or more effective policy recommendations. By the time policy papers have been fully reviewed and finalized, they are read by at least 5-10 experts in the topic's field.

EQUITY REVIEW COMMITTEE WORKS TO ENSURE POLICIES ARE EQUITABLE

In order to avoid policy recommendations that may have an adverse impact on environmental justice communities - specifically low-income communities, communities of color, and rural communities - a team of Network Partners serves on the Equity Review Committee. The committee reviews all briefing paper drafts to ensure that policies won't have unintended consequences and looks for opportunities where policies can lift up historically marginalized communities. Recommendations offered by the Equity Review Team are considered by the co-authors and integrated to the best of their collective ability.

LEGISLATIVE COMMITTEE VOTES ON POLICY RECOMMENDATIONS

Our legislative committee is made up of partners from each of our workgroups who have experience working on policies in Richmond. This is an opportunity to break down the silos between workgroups - energy experts review water papers, land conservation experts review transportation papers, etc. This helps ensure policies don't unintentionally adversely impact other workgroup issue areas as well as to ensure policies are bold yet attainable. Policy recommendations are voted on by the committee.

BOARD OF DIRECTORS VOTE TO ACCEPT EACH POLICY PAPER

The final step in the journey from a policy idea to a place in *Our Common Agenda* is a vote by VCN's Board of Directors. Each policy paper is presented to the Board and a vote on its inclusion follows. This final step of the process ensures that topics and policy recommendations are in line with VCN's mission and goals.

OUR COMMON AGENDA

A MESSAGE FROM THE EXECUTIVE DIRECTOR

Thank you for opening up a copy of Virginia Conservation Network's (VCN) *Our 2023 Common Agenda*.

Our Common Agenda is your road map for state-based policy solutions to address the environmental problems facing Virginia. A collection of papers written by, vetted through, and voted on by VCN's 150+ Network Partners, this book lays out a suite of policy ideas to address clean water & flood resilience, land & wildlife conservation, land use & transportation, climate & energy, and good governance.

I encourage you to use this book both as an educational resource as well as a Rolodex for leading conservation advocates in Virginia. The authors of *Our Common Agenda* are leading conservation advocates in Virginia. They ground their research and findings in science and present practical policy solutions that are equitable for all Virginians.

As you read through this year's *Our Common Agenda*, you'll see a continued focus on meeting our goals to clean up the Chesapeake Bay and power the Commonwealth with 100% clean energy. In addition, you'll learn about everything from increasing trail connectivity to ensuring community flood resilience to opportunities to increase rail capacity.

These are just a few highlights from this year's *Our Common Agenda* briefing book. As a partnership of 150+ conservation organizations, we believe that if we work together to solve Virginia's biggest environmental problems we'll leave the Commonwealth better than we found it for the next generation. I'm looking forward to working with you on whichever topic or topics interests you the most. Feel free to reach out to me, my team, or any of the authors in this book for more information.



Mary Rafferty
Executive Director

CLEAN WATER & FLOOD RESILIENCE

Virginia's creeks, rivers, and bays are already seeing climate change impacts, from sea level rise along our coastlines to polluted runoff from increasingly severe storms to surges of flooding statewide. We need to protect and expand upon policies and programs to ensure clean waters and a flood-resilient future for all Virginians. We must also continue to make progress towards our Chesapeake Bay goals as the 2025 watershed clean-up plan is rapidly approaching. Each contributing state's Watershed Implementation Plan (WIP) is designed to accomplish its own set of pollutant reduction goals identified through the Chesapeake Bay Total Maximum Daily Load (TMDL). To significantly reduce the amount of pollution delivered to our nation's largest estuary, we must ensure strong and sustained funding for key local and statewide initiatives to reduce pollution from stormwater runoff, agriculture, industrial toxins, and plastic waste.

CLEAN WATER SUMMARIES AND CONTACT INFORMATION	3
CLEANING UP POLLUTED STORMWATER RUNOFF.....	5
WORKING WITH FARMERS TO PROTECT LOCAL WATERS.....	7
INVESTING IN WASTEWATER INFRASTRUCTURE NEEDS.....	9
PROTECTING THE ALBEMARLE-PAMLICO WATERSHED.....	11
PLASTIC & TOXIC WASTE SUMMARIES AND CONTACT INFORMATION	13
REDUCING PLASTIC POLLUTION.....	15
STOPPING CHEMICAL, PLASTICS, & FOSSIL FUEL INDUSTRY GREENWASHING.....	17
TACKLING TOXIC POLLUTANTS.....	19
FLOOD & CLIMATE RESILIENCY SUMMARIES AND CONTACT INFORMATION	21
ADDRESSING STATEWIDE FLOOD RISK EQUITABLY.....	23
SEQUESTERING CARBON THROUGH OUR NATURAL RESOURCES.....	25

EXECUTIVE SUMMARIES & CONTACT INFORMATION

CLEANING UP POLLUTED STORMWATER RUNOFF

Stormwater runoff from urban and suburban areas is the fastest growing source of pollution to our water and the main reason many of our urban streams are impaired. This growth is largely caused by the expansion of our built environment and impervious surfaces — parking lots, roofs, and roads — which carry more polluted runoff to our waterways. More intense rainfall events are in the forecast as a result of climate change, bringing more water and potentially costly flooding. Virginia's plan to clean up the Chesapeake Bay calls for strong investments in better stormwater control to protect clean water and frontline communities.

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Anna Killius // James River Association // akillius@thejamesriver.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

WORKING WITH FARMERS TO PROTECT LOCAL WATERS

Agriculture is Virginia's largest industry by many metrics. It also represents the largest source of nutrient and sediment pollution reaching Virginia's local streams, rivers, and the Chesapeake Bay. Fortunately, addressing these pollution loads offers an opportunity to improve the Commonwealth's natural resources while also enhancing the positive economic impact of agriculture. The Virginia Agricultural Cost Share Program (VACS) funds the implementation of a wide suite of agricultural practices that reduce pollution while enhancing farm productivity. Virginia should follow through on its commitment to fully fund this impactful program.

Anna Killius // James River Association // akillius@thejamesriver.org
Kate Wofford // Alliance for the Shenandoah Valley // kwofford@shenandoahalliance.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

INVESTING IN WASTEWATER INFRASTRUCTURE NEEDS

Upgrades to wastewater facilities are a proven strategy for benefiting water quality and reducing large quantities of pollution. Virginia's wastewater agencies have played a major role in reducing nutrient pollution to date, but they have been asked to accelerate this important work in the Phase III Watershed Implementation Plan (Phase III WIP) and through recent legislation requiring upgrades to wastewater treatment facilities and to remaining combined sewer overflow (CSO) systems. The Virginia General Assembly needs to support these programs to continue protecting water quality and public health.

Anna Killius // James River Association // akillius@thejamesriver.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

PROTECTING THE ALBEMARLE-PAMLICO WATERSHED

Virginia lies between the two largest estuaries in the United States: the Chesapeake Bay to the north and the Albemarle and Pamlico Sounds to the south. We have an obligation to protect and restore both of these estuaries. With 25% of Virginia's land area draining to the Albemarle and Pamlico Sounds and the increasing challenges to the health of this system, there is a critical need for baseline data that would ground effective planning in the Albemarle-Pamlico watershed. Effective planning will be aided by a mechanism for communication both among the cities and counties in Virginia that make up this watershed as well as good communication with our partners in North Carolina.

Karen W. Forget // Lynnhaven River NOW // karen@lrnow.org
Skip Stiles // Wetlands Watch // skip.stiles@wetlandswatch.org

Shenandoah River, Luray
Photo by Lisa Watkins



CLEANING UP POLLUTED STORMWATER RUNOFF

CLEAN WATER

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Anna Killius // James River Association // akillius@thejamesriver.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

EXECUTIVE SUMMARY

Stormwater runoff from urban and suburban areas is the fastest growing source of pollution to our water and the main reason many of our urban streams are impaired. This growth is largely caused by the expansion of our built environment and impervious surfaces — parking lots, roofs, and roads — which carry more polluted runoff to our waterways. More intense rainfall events are in the forecast as a result of climate change, bringing more water and potentially costly flooding. Virginia's plan to clean up the Chesapeake Bay calls for strong investments in better stormwater control to protect clean water and frontline communities.

CHALLENGE

Virginians rely on local creeks and rivers for healthy, vibrant communities and strong economies. Three-out-of-four Virginians depend upon healthy headwater streams for their drinking water.¹ Our Commonwealth is the largest seafood producer on the East Coast, with 50 commercially harvested species.² And our outdoor recreation industry is booming, providing over 100,000 direct jobs and \$4.4 billion in wages and salaries.³

Three-out-of-four Virginians depend upon healthy headwater streams for their drinking water.

Despite our reliance on healthy waterways, polluted runoff — the muddy stew of stormwater, dirt, bacteria, toxins, and plastic waste that runs off streets, parking lots, and other hard surfaces — continues to threaten our local creeks, streams, and rivers. It remains the fastest growing source of pollution to the Chesapeake Bay,⁴ undermining Virginia's goal to restore local streams and the Bay by 2025.

Much of our urban and suburban infrastructure was built before we fully understood how stormwater degrades local streams. Now, many larger localities are required to reduce the nutrient and sediment pollution that they contribute to Virginia's waterways. Implementing programs to achieve these reductions — like projects to retrofit older infrastructure — can be expensive. But for years, low-income communities have been among the least likely to receive state funding to support this work. The state can and should encourage pollution reduction practices by providing strong, equitable funding support and strengthening our existing stormwater regulations to account for heavier, more frequent rain events due to climate change. Cities and towns, churches and schools, homeowners and developers — everyone has a role to play in keeping nutrient and sediment pollution out of our stormwater.

SOLUTION

STORMWATER LOCAL ASSISTANCE FUND

To help with expensive stormwater projects, the Virginia General Assembly created the Stormwater Local Assistance Fund (SLAF), a state and local matching grant program to protect and improve the health of our waterways. This fund has recently been improved to provide additional attention to fiscally stressed communities and flood resilience. Over its lifespan, SLAF has authorized \$147 million in grants for 290 projects across Virginia, and demand for this program will continue to grow.⁵ Based on the amount of pollution urban and suburban areas must remove to meet the Commonwealth's Bay Cleanup plan, the state needs to invest approximately \$80 million in SLAF annually. The General Assembly provided \$25 million in Fiscal Year 2023, with no funding allotted for Fiscal Year 2024. Strong, sustained funding is critical to ensure progress can be maintained.

VIRGINIA CONSERVATION ASSISTANCE PROGRAM

The Virginia Conservation Assistance Program (VCAP) is an urban cost-share program that provides financial incentives and technical and educational assistance to property owners installing eligible Best Management Practices (BMPs) in Virginia's participating Soil and Water Conservation Districts (SWCDs).

These practices such as rain gardens, conservation landscaping and living shorelines are installed where problems like erosion, poor drainage, or poor vegetation occur. Since the program began in 2012, Virginia's Soil and Water Conservation Districts and their partners have installed over 800 projects. Last year, the General Assembly included \$1 million to support VCAP projects across the state, but only allotted \$500,000 the year before. Consistent, stable funding is an important part of encouraging property owners to participate.

Bioretention Pond

Photo by Craig Carlson



POLICY RECOMMENDATIONS

Allocate at least \$80 million each year for the Stormwater Local Assistance Fund to invest in pollution reduction projects and help localities meet their local water quality needs on time.

Maintain \$2 million per year for the Virginia Conservation Assistance Program to restore the creeks and streams our children play in; create habitat for birds, bees, and other pollinators; reduce localized flooding; and protect property values.

Promote resilient communities and smarter growth by strengthening Virginia's Erosion and Sediment Control Program and Stormwater Management Program to meet our Bay Cleanup goals and account for stronger, more frequent storm events.

WORKING WITH FARMERS TO PROTECT LOCAL WATERS

CLEAN WATER

Anna Killius // James River Association // akillius@thejamesriver.org
Kate Wofford // Alliance for the Shenandoah Valley // kwofford@shenandoahalliance.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

EXECUTIVE SUMMARY

Agriculture is Virginia's largest industry by many metrics. It also represents the largest source of nutrient and sediment pollution reaching Virginia's local streams, rivers, and the Chesapeake Bay.¹ Fortunately, addressing these pollution loads offers an opportunity to improve the Commonwealth's natural resources while also enhancing the positive economic impact of agriculture. The Virginia Agricultural Cost Share Program (VACS) funds the implementation of a wide suite of agricultural practices that reduce pollution while enhancing farm productivity. Virginia should follow through on its commitment to fully fund this impactful program.

CHALLENGE

The Chesapeake Bay Watershed Implementation Plan and the 2020 Virginia General Assembly (HB1422/SB704) set a distinct timeline for farmers to protect their streams and the Bay by installing voluntary conservation practices.² To meet our Bay goals by 2025, 75% of the remaining nitrogen pollution reductions must come from the agricultural sector.³ At our current pace, however, we will not have enough conservation practices installed on Virginia farmland on time. Without sufficient financial and technical support from a fully-funded VACS program to assist the agriculture sector in its critical role in reducing nutrient and sediment pollution to the Chesapeake Bay, the timeline will not be met and Virginia will be out of compliance with the Clean Water Act.

To meet our Bay goals by 2025, 75% of the remaining nitrogen pollution reductions must come from the agricultural sector.

The Virginia Department of Conservation and Recreation administers VACS through the Soil and Water Conservation Board and Virginia's 47 Soil and Water Conservation Districts. The

Districts' experienced staff assists farmers and landowners to identify opportunities to improve local water quality and prevent pollution from reaching Virginia's waterways, provides technical assistance in implementing best management practices (BMPs), and helps to offset the cost of installing the practices.⁴ These BMPs include stream fencing and alternative water sources to keep livestock out of streams; nutrient management plans that help farmers decide when and how to apply fertilizers; riparian grass and forested buffers to filter nutrient and sediment from runoff; conservation tillage and cover crops to keep soils on farms; and, many other practices essential to protecting Virginia's streams, lakes, rivers, and bays.

SOLUTION

Every other year, the Virginia Department of Conservation and Recreation—working with farmers, the Soil and Water Conservation Districts, and other stakeholders—compiles an Agricultural Needs Assessment detailing how much investment is needed for agricultural BMPs. The most recent assessment shows that, in order to maximize benefits to local and downstream waterways and Virginia communities, VACS should be funded at no less than \$256 million over the biennium.⁵ For the first time, the General Assembly has fully-funded the VACS program in the state budget, a major achievement for Virginia. Strong, sustained funding at the level identified in the Agricultural Needs Assessment will facilitate a faster pace of progress, improve water quality, and invest in agricultural economies both in and beyond the Chesapeake Bay Watershed.

Investments in agricultural BMPs improve water quality, create local jobs, and deliver economic benefits for rural communities. Livestock exclusion from streams prevents calf losses and improves herd health.⁶ Increased efficiency of nutrient application reduces fertilizer loss while

improving crop yield. Conservation tillage, cover crops, rotational grazing, and other practices further improve soil health and productivity.⁷

Reducing agricultural runoff will also improve the well-being of local communities that benefit from cleaner, healthier streams and rivers through safe drinking water, outdoor recreation, and enhanced tourism opportunities.

It is important that these investments in agricultural BMPs are equitably reaching historically underserved communities like farmers of color. As noted by the Virginia Soil and Water Conservation Board, the allocation of funding for the VACS program should address Diversity, Equity, Inclusion and Justice concerns, and the state should follow through with this directive.⁸

Smitten Farm Cattle Fencing & Riparian Buffer

Photo by Hugh Kenny

POLICY RECOMMENDATIONS

Maintain full funding (at least \$256 million) for the Virginia Agricultural Cost-Share Program (VACS), as estimated by the Agricultural Needs Assessment and accounting for impacts related to inflation.

Provide sufficient and stable funding for technical assistance by Soil and Water Conservation Districts to ensure adequate staff capacity and training.

Support additional financial incentives for long-term conservation practices like stream exclusion fencing and riparian buffers that are critical to meeting the requirements of the Watershed Implementation Plan and excluding livestock from all of the Commonwealth's perennial streams.



INVESTING IN WASTEWATER INFRASTRUCTURE NEEDS

CLEAN WATER

Anna Killius // James River Association // akillius@thejamesriver.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

EXECUTIVE SUMMARY

Upgrades to wastewater facilities are a proven strategy for benefiting water quality and reducing large quantities of pollution. Virginia's wastewater agencies have played a major role in reducing nutrient pollution to date, but they have been asked to accelerate this important work in the Phase III Watershed Implementation Plan (Phase III WIP) and through recent legislation requiring upgrades to wastewater treatment facilities and to remaining combined sewer overflow (CSO) systems. The Virginia General Assembly needs to support these programs to continue protecting water quality and public health.

CHALLENGE

We are now seeing the beginnings of a remarkable, though still fragile, recovery of our local streams, rivers, and Chesapeake Bay — increased water clarity and quality, and thousands of acres of thriving aquatic grasses. These signs of success are strongly attributable to the hard work of wastewater agencies and the localities they serve, but also the Commonwealth's long-term financial commitment to the program, reflected in sustained funding for matching grants to upgrade nutrient pollution reduction capabilities.

In the last decade and a half, many of Virginia's wastewater treatment plants have adopted upgraded nutrient pollution removal technology to significantly reduce the pollution discharged to local rivers and the Bay. The work is not complete, however. Our watersheds have more people, fewer forests, and are facing climate change impacts. As a result, Virginia and regional partners will have to enhance efforts to meet the goal of a restored Bay, as called for in the Commonwealth's Phase III WIP.¹

Virginia also has three cities with combined sewer systems that, when overloaded by stormwater, send untreated storm and wastewater directly

into nearby rivers with concerning health implications.² Legislation passed in 2017 and 2020 put deadlines on the cities of Alexandria and Richmond to address untreated overflow events from their combined sewer systems. But the scale of these infrastructure problems requires state help — particularly in Richmond, the seat of state government, where 23.2% of residents are below the poverty line³ and already pay some of the highest wastewater rates in Virginia.

SOLUTION

The General Assembly placed Richmond on a timeline to remediate its CSO system by 2035 through legislation (SB1064) passed in 2020. In 2021, the Enhanced Nutrient Removal Certainty Program (HB 2129/SB1354) was established, which will ensure Virginia achieves the wastewater treatment technology upgrades necessary to meet the Phase III WIP. Still, the funding to implement these projects is critical to accomplishing these goals.

Rural communities, especially rural communities of color, “have long faced challenges with toxic water due to insufficient water infrastructure.”

Not only will more complete wastewater treatment revitalize the Bay and its tributaries, but it will ensure that communities across the Commonwealth will more equitably receive the benefits of clean water in their own communities. Rural communities, especially rural communities of color, “have long faced challenges with toxic water due to insufficient water infrastructure,” while low income ratepayers in urban areas struggle to afford wastewater and drinking water improvements.⁴ State investment will help these communities maintain and improve aging infrastructure, prevent local water quality problems like toxic algae, and create jobs for skilled workers.⁵

Virginia should look to the estimated needs for wastewater and CSO upgrades when forming its FY2024 budget. Each year, DEQ conducts an annual needs assessment for the wastewater sector to project the amount of state funding needed to help localities meet their pollution reduction goals through infrastructure upgrades.⁶ The results will be included in the annual Chesapeake Bay and Virginia Waters Clean-Up Plan, due winter 2022.⁷ Additionally, Richmond's most recent assessment estimates it will cost at least \$1.3 billion to complete remediation work on its combined sewer system.⁸

Cambridge Wastewater Plant

Photo by Will Parson

POLICY RECOMMENDATIONS

Fully fund state grants for wastewater treatment upgrades to fulfill the requirements of the Enhanced Nutrient Reduction Certainty Program, as identified by the Needs Assessment, and cost-effectively reduce pollution to Virginia's waterways.

Maintain state funding to localities remediating aging CSO systems, once again making local rivers swimmable and fishable.



PROTECTING THE ALBEMARLE-PAMLICO WATERSHED

CLEAN WATER

Karen W. Forget // Lynnhaven River NOW // karen@lrnow.org
Skip Stiles // Wetlands Watch // skip.stiles@wetlandswatch.org

EXECUTIVE SUMMARY

Virginia lies between the two largest estuaries in the United States: the Chesapeake Bay to the north and the Albemarle and Pamlico Sounds to the south. We have an obligation to protect and restore both of these estuaries. With 25% of Virginia's land area draining to the Albemarle and Pamlico Sounds and the increasing challenges to the health of this system, there is a critical need for baseline data that would ground effective planning in the Albemarle-Pamlico watershed. Effective planning will be aided by a mechanism for communication both among the cities and counties in Virginia that make up this watershed as well as good communication with our partners in North Carolina.

CHALLENGE

The Virginia portion of the Albemarle-Pamlico watershed consists of three river basins and includes thirty-eight Virginia counties and cities. It covers roughly 10,500 square miles in the southern portion of our state, or 25% of the land area of Virginia. The area is rich in farmland and recreational opportunities as well as providing drinking water for approximately two million Virginians.

The watershed spans from the Atlantic Ocean well into the mountains past Roanoke, with habitats ranging from open estuary and coastal marsh to densely forested upland piedmont. Some of the plant and animal species here are not found anywhere else in Virginia and several are threatened or species of concern.

The Albemarle-Pamlico watershed consists of three basins and includes thirty-eight counties and cities, providing drinking water for approximately two million Virginians.

Increasingly, the health of this watershed and the rivers and estuaries that it supports is being threatened. The Albemarle-Pamlico faces increasing challenges from climate change and sea-level rise, increased precipitation and larger and longer-lasting storms,¹ storage of toxins and manure lagoons in flood plains, potential metals mining, increasing demands for groundwater from a shrinking aquifer, and need for improved farming practices.

SOLUTION

On August 31, 2020, Virginia signed a Memorandum of Understanding² with North Carolina to work collaboratively on the management of the Albemarle-Pamlico watershed. To fulfill our obligations, Virginia needs to increase investment in the study and protection of this watershed to a degree that reflects its value to the Commonwealth.

Currently, there is a lack of baseline data on the Albemarle-Pamlico watershed areas of Virginia. We need better and more complete information in order to plan effectively for the future, including:

- Land-use and demographic data;
- Toxin and bio-waste storage information;
- Rainfall data and precipitation projections;
- Historic flooding data and rainfall and sea level rise predictions;
- Groundwater supply, usage, quality, and sustainability;
- Distribution and population data on key species of both flora and fauna, including endangered, threatened, and species of concern;
- Mapping that shows the location of conserved lands and riparian buffers;
- Threats to drinking water supplies;
- Assessment of the stormwater and wastewater needs by city and county; and
- Mapping and data of installed agricultural best management practices (BMP).

This information will become the basis for a much-needed strategic plan for Virginia's Albemarle-Pamlico watershed and our collaboration with North Carolina.

A significant part of Virginia lies in the Albemarle-Pamlico watershed, and we have a responsibility to restore and protect the natural resources as well as the quality of life of the residents in this watershed. We also have an obligation to work together with our partners in North Carolina to plan effectively for the future of this beautiful and bountiful estuary.

Back Bay Sunset, Virginia Beach

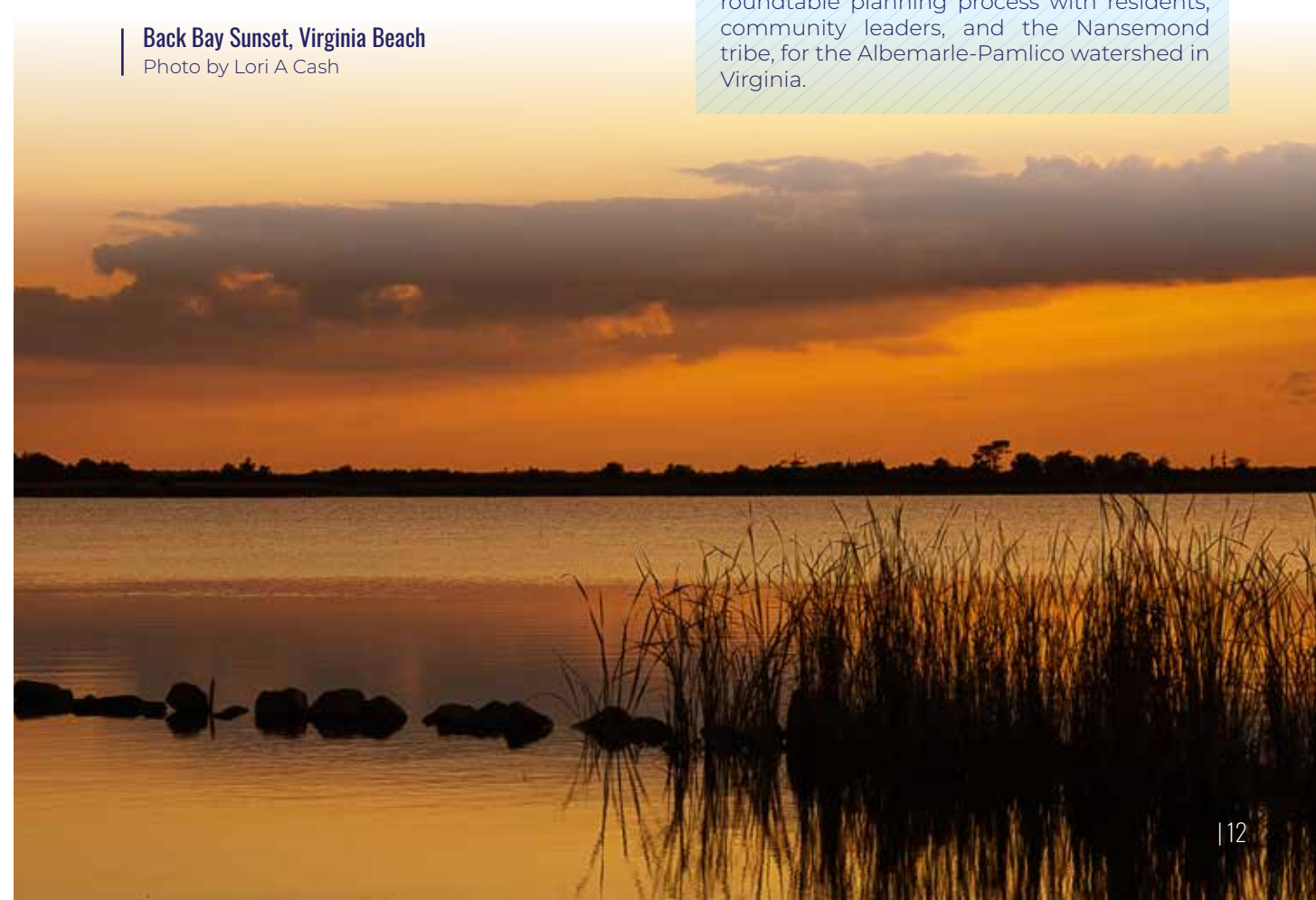
Photo by Lori A Cash

POLICY RECOMMENDATIONS

Cost-sharing funding for best management practices is needed in this part of the Commonwealth.

Fund a comprehensive Albemarle-Pamlico watershed study within the Department of Environmental Quality, to include at a minimum the items listed above.

Direct the appropriate agency to initiate a roundtable planning process with residents, community leaders, and the Nansemond tribe, for the Albemarle-Pamlico watershed in Virginia.





PLASTIC & TOXIC WASTE

EXECUTIVE SUMMARIES & CONTACT INFORMATION

REDUCING PLASTIC POLLUTION

Eradicating plastic pollution is a top priority for many Virginians. Building on this concern, now is the time to craft policies and laws that will keep plastic waste out of Virginia's streams, rivers, and coastal waters. Waters polluted with plastic have negative health effects on humans and wildlife. We can further tackle plastic pollution in Virginia by eliminating the most harmful types of mismanaged waste, incentivizing sustainable disposal of what we do use, increasing producer responsibility, and encouraging the shift to sustainable and reusable products. Virginia has made progress to eliminate plastic pollution in previous years and further actions would continue this legacy.

Elly Boehmer // Environment Virginia // eboehmer@environmentvirginia.org

Jim Deppe // Lynnhaven River NOW // jim@lrnow.org

Emily Foppe // Clean Fairfax // emily@cleanfairfax.org

Katie Register // Clean Va Waterways of Longwood University // registerkm@longwood.edu

STOPPING CHEMICAL, PLASTICS, & FOSSIL FUEL INDUSTRY GREENWASHING

Virginia's waterways are under assault by single-use plastic pollution, but chemical conversion, also known as Advanced or Chemical Recycling, is a false and flawed solution to the plastic pollution crisis threatening our local waterways, oceans, and aquatic animals. Chemical conversion will not reduce the use of single-use plastics, rather it will incentivize plastics continued use as a feedstock for plastics-to-fuel facilities. The resulting air pollution and hazardous waste generated from chemical conversion would put Virginia's communities and environmental health at risk. Legislators and regulators must ensure that the industry does not pollute waterways, entrench our dependence on single-use plastics, and inequitably burden communities of color where chemical conversion plants are often sited.

Elly Boehmer // Environment Virginia // eboehmer@environmentvirginia.org

Emily Foppe // Clean Fairfax // emily@cleanfairfax.org

Connor Kish // Sierra Club Virginia Chapter // connor.kish@sierraclub.org

TACKLING TOXIC POLLUTANTS

Industrial pollutants such as per- and polyfluoroalkyl substances (PFAS) and polycyclic aromatic hydrocarbons (PAHs) are a threat to our environment and our health. These chemicals have been linked to cancer, infertility, and other serious impacts. Virginia needs to take steps to track and mitigate these toxic pollutants so that all communities benefit from clean water, clean air, and healthy soil.

Carroll Courtenay // Southern Environmental Law Center // ccourtenay@selcva.org

Anna Killius // James River Association // akillius@thejamesriver.org

Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

VCN POINT OF CONTACT

Pat Calvert // pat@vcnva.org

Senior Policy & Campaigns Manager - Land Conservation & Clean Water

REDUCING PLASTIC POLLUTION

PLASTIC & TOXIC WASTE

Elly Boehmer // Environment Virginia // eboehmer@environmentvirginia.org

Jim Deppe // Lynnhaven River NOW // jim@lrnow.org

Emily Foppe // Clean Fairfax // emily@cleanfairfax.org

Katie Register // Clean Virginia Waterways of Longwood University // registerkm@longwood.edu

EXECUTIVE SUMMARY

Eradicating plastic pollution is a top priority for many Virginians. Building on this concern, now is the time to craft policies and laws that will keep plastic waste out of Virginia's streams, rivers, and coastal waters. Waters polluted with plastic have negative health effects on humans and wildlife. We can further tackle plastic pollution in Virginia by eliminating the most harmful types of mismanaged waste, incentivizing sustainable disposal of what we do use, increasing producer responsibility, and encouraging the shift to sustainable and reusable products. Virginia has made progress to eliminate plastic pollution in previous years and further actions would continue this legacy.

CHALLENGE

Our society produces single-use plastic items that are discarded, creating pollution and further extraction of natural resources.¹ When mismanaged, trash ends up in Virginia's natural landscapes and waterways. The unintended consequences of single-use plastics result in devastating impacts on wildlife, including sea turtles, birds, fish, mammals, and important water-filtering bivalves like oysters and mussels through entanglement and ingestion.²

Eighty percent of debris in the oceans comes from land.

Eighty percent of debris in the oceans comes from land: mismanaged waste, litter, illegal dumping, and uncovered trucks (e.g., food- and beverage-related items, cigarette butts and plastic grocery bags).^{3,4}

This mismanaged waste disproportionately affects historically disadvantaged communities as it disparately burdens BIPOC and communities of low wealth.⁵ Exposure to plastic additives have negative biological effects on humans and wildlife.⁶

Abandoned and derelict vessels (ADVs) obstruct navigational channels, cause harm to the environment, and diminish commercial and recreational activities. ADVs, most of which are plastic material reinforced with glass fibers, also have negative financial impacts.

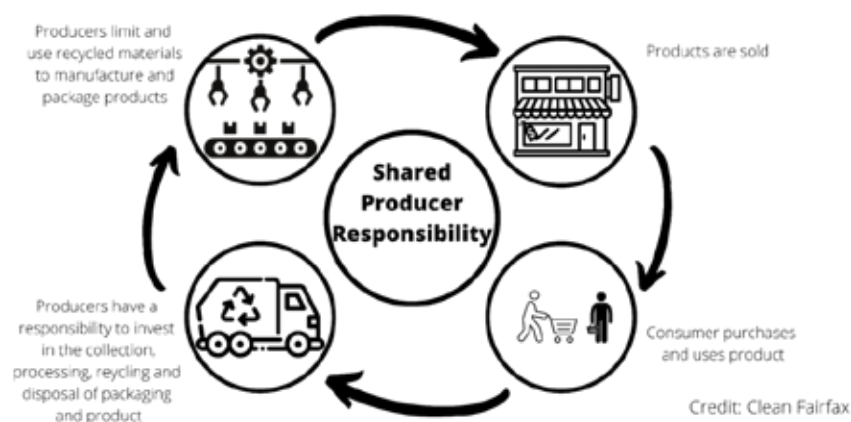
Our broken recycling system is insufficient in action, funding, and impact as it does not reduce single-use products nor does it hold producers responsible for the plastic pollution crises.

SOLUTION

PRODUCER RESPONSIBILITY

Responsibility for litter clean ups, recycling, and waste disposal should be shifted from taxpayers onto manufacturers. A producer responsibility program incentivizes manufacturers to decrease packaging, increase recycled content, and create recyclable, reusable, or biodegradable products.

Sharing responsibility between taxpayers/consumers and producers has these components:



More and more states have established product stewardship programs where manufacturers pay for recycling and waste reduction, rather than taxpayers.

BEVERAGE CONTAINER DEPOSIT

In Virginia, bottles and cans account for nearly 22% of all litter; states with container deposits have significantly less.⁷ Beverage container deposits ("bottle bills") incentivize consumers to return containers for recycling. These proven programs increase recycling, while reducing litter, energy use, and greenhouse gas emissions.⁸

CONTINUED EFFORTS

In 2020 and 2021, Virginia made progress by passing a ban on single-use foam containers, banning intentional balloon releases, and increasing the litter tax. Additionally, eight localities used their new authority to put a fee on plastic bags. Challenges include: the 2022 General Assembly delayed the ban on foam plastic by five years. Virginia's litter tax is still inadequate, generating 40-80% less revenue than other states.⁹

POLICY RECOMMENDATIONS

Ban the use of single-use expanded polystyrene by food vendors by 2024 rather than having a 7-year phase-out period.

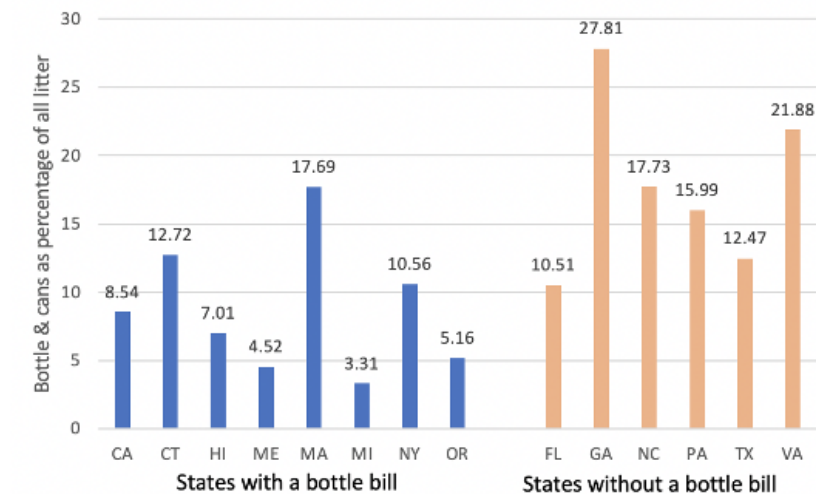
Establish a producer responsibility program focused on a reduction in harmful packaging, where manufacturers pay for recycling and waste reduction, rather than taxpayers.

Establish a statewide beverage container deposit ("bottle bill").

Increase the Virginia Litter Tax to be based on volume of sales rather than a flat tax of \$20 per business, and index the rate to inflation so it adjusts periodically. Also, allow non-profit organizations access to the Litter Control & Recycling Fund.

Fund the Virginia Abandoned and Derelict Vessel Prevention and Removal Program at \$3 million for FY 2023-24.

Bottle bill states vs. non-bottle bill states: litter from bottles and cans



Refundable deposits on beverage bottles and cans lead to less litter from these items as shown in this chart that compares states with and without bottle bills.

Graph by Clean Virginia Waterways

STOPPING CHEMICAL, PLASTICS, & FOSSIL FUEL INDUSTRY GREENWASHING *PLASTIC & TOXIC WASTE*

Elly Boehmer // Environment Virginia // eboehmer@environmentvirginia.org
 Emily Foppe // Clean Fairfax // emily@cleanfairfax.org
 Connor Kish // Sierra Club Virginia Chapter // connor.kish@sierraclub.org

EXECUTIVE SUMMARY

Virginia's waterways are under assault by single-use plastic pollution, but chemical conversion, also known as Advanced or Chemical Recycling, is a false and flawed solution to the plastic pollution crisis threatening our local waterways, oceans, and aquatic animals. Chemical conversion will not reduce the use of single-use plastics, rather it will incentivize plastics continued use as a feedstock for plastics-to-fuel facilities. The resulting air pollution and hazardous waste generated from chemical conversion would put Virginia's communities and environmental health at risk. Legislators and regulators must ensure that the industry does not pollute waterways, entrench our dependence on single-use plastics, and inequitably burden communities of color where chemical conversion plants are often sited.¹

CHALLENGE

Chemical conversion is an experimental process where plastic is melted down in an oxygen-free environment to render a raw material for more plastic production, or to create fuel (see graphic below). Often, the plastic used in the chemical

conversion process is sourced from brokers or single companies, and would not "recycle" local plastic products used by Virginians.

Over 49,000 tons of toxins went into our air in 2018 due to chemical conversion.

The increased air pollution and hazardous waste production that result from chemical conversion put Virginians' health at risk. In 2018, when the fuel and feedstock produced from one of these facilities alone was burned, over 49,000 tons of toxins went into our air.² Pollution disproportionately burdens communities of color and, as a result of this environmental injustice, Black people are three times more likely to die from exposure to air pollutants than white people.^{3,4} In particular, seven of the eight chemical conversion facilities in the United States are in communities that are low income, Black, or both;⁵ this combined with the fact that these facilities are often out of compliance with EPA compliance with hazardous waste regulations further demonstrates chemical conversion as a false, unequitable solution.

Plastic pollution and lack of effective recycling industry infrastructure has given the industries an opportunity to market "advanced recycling" technology, like chemical conversion, as a solution, despite the complete lack of operating success.

The American Chemistry Council has succeeded in convincing eighteen state legislatures⁶ to pass bills, such as 2021 bill SB1164 in Virginia, that effectively exempt these facilities from important waste regulations.

Moreover, the short history of chemical conversion facilities in Virginia confirms chemical conversion as a false solution to the plastic pollution crisis and a waste of taxpayer money. Braven Environmental LLC abruptly canceled its plans to build a facility that would serve as a "solution" to the state's plastic waste problem in Cumberland County,⁷ after receiving over \$200,000 in state grants in 2020.

SOLUTION

State solid waste management policy should focus on reducing single-use plastics in the waste stream and as litter, reusing products where possible, and if recycling is required, elevate solutions that reduce the amount of virgin plastics manufactured.

Emerging technologies, such as chemical conversion, should be robustly evaluated for safety and proof of scalability before being allowed in Virginia. Technologies should be profitable (i.e. not reliant on taxpayer dollars) and proven to achieve goals that advance Virginia's quality of life, such as litter reduction, plastic waste management, and environmental equity.

We have seen the chemical conversion industry stumble due to issues surrounding technology scalability, high volumes of hazardous waste production, energy consumption, and overall inability to turn over a profit. To truly tackle the plastic pollution crisis, Virginia needs actual plastic reduction solutions that reduce our reliance on single use plastic (see REDUCING PLASTIC WASTE, page 15) to protect human health, our waterways, the ocean, and aquatic animals, such as turtles.

POLICY RECOMMENDATIONS

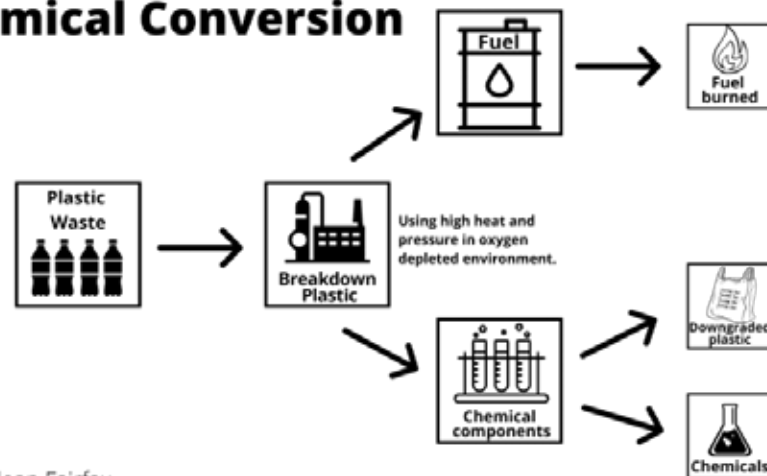
State code should clarify that technologies that turn plastic to fuel are not recycling, and should be regulated using all applicable solid waste and energy laws.

Support proven solutions that reduce overall plastic consumption like an extended producer responsibility program or others outlined in REDUCING PLASTIC POLLUTION, page 15.

Ensure the protection of environmental justice communities that are disproportionately impacted by chemical conversion facilities by requiring comprehensive environmental justice impact analysis, including robust air quality monitoring systems in site suitability studies.

Taxpayer money (loans or grants) should not be used to recruit or retain any private chemical conversion businesses.

Chemical Conversion



Credit: Clean Fairfax



Discarded water bottle
 Photo by Patti Black

TACKLING TOXIC POLLUTANTS

PLASTIC & TOXIC WASTE

Carroll Courtenay // Southern Environmental Law Center // ccourtenay@selcva.org
 Anna Killius // James River Association // akillius@thejamesriver.org
 Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

EXECUTIVE SUMMARY

Industrial pollutants such as per- and polyfluoroalkyl substances (PFAS) and polycyclic aromatic hydrocarbons (PAHs) are a threat to our environment and our health. These chemicals have been linked to cancer, infertility, and other serious impacts. Virginia needs to take steps to track and mitigate these toxic pollutants so that all communities benefit from clean water, clean air, and healthy soil.

CHALLENGE

PFAS

Commonly called “forever chemicals,” PFAS are toxic, bioaccumulative, and extremely persistent man-made chemicals.¹ Exposure to these chem-

icals may impact fertility, raise cholesterol levels, and increase the risk of some forms of cancer.^{2,3} While the public can come into direct contact with PFAS through everyday items like water-proof and stain-resistant items, food packaging, and non-stick cookware, significant and concentrated streams of these chemicals can be released into our environment by firefighting foams, industrial uses, wastewater discharge, landfills, and land-applied biosolids.⁴ This can lead to contamination of drinking water, soil, crops, and forage for livestock and wildlife. Initial studies in Virginia have found PFAS contamination in public drinking water, private well-water, and in White Oak Swamp near Richmond International Airport, with additional studies on the way.^{5,6,7}

Unfortunately, Virginia does not require polluters to disclose or control these chemicals in their discharges or land-applied biosolids, leaving downstream communities, private well-owners, and farmers at risk or on-the-hook for the costly cleanup. Toxic facilities are more often concentrated in low-income communities and communities of color. One study found that members of these communities are more likely to live within five miles of a site contaminated by PFAS.⁸

Drinking water standards are an important component of protecting public health, but ultimately PFAS pollution must be stopped at its source. The Commonwealth should identify and control pathways of PFAS and put the responsibility on polluters—not communities—to clean up their waste by i) requiring polluters to disclose all chemicals released in their discharges and ii) including monitoring, reporting, and treatment requirements for PFAS in wastewater, solid waste, land-applied biosolids, and air regulations.

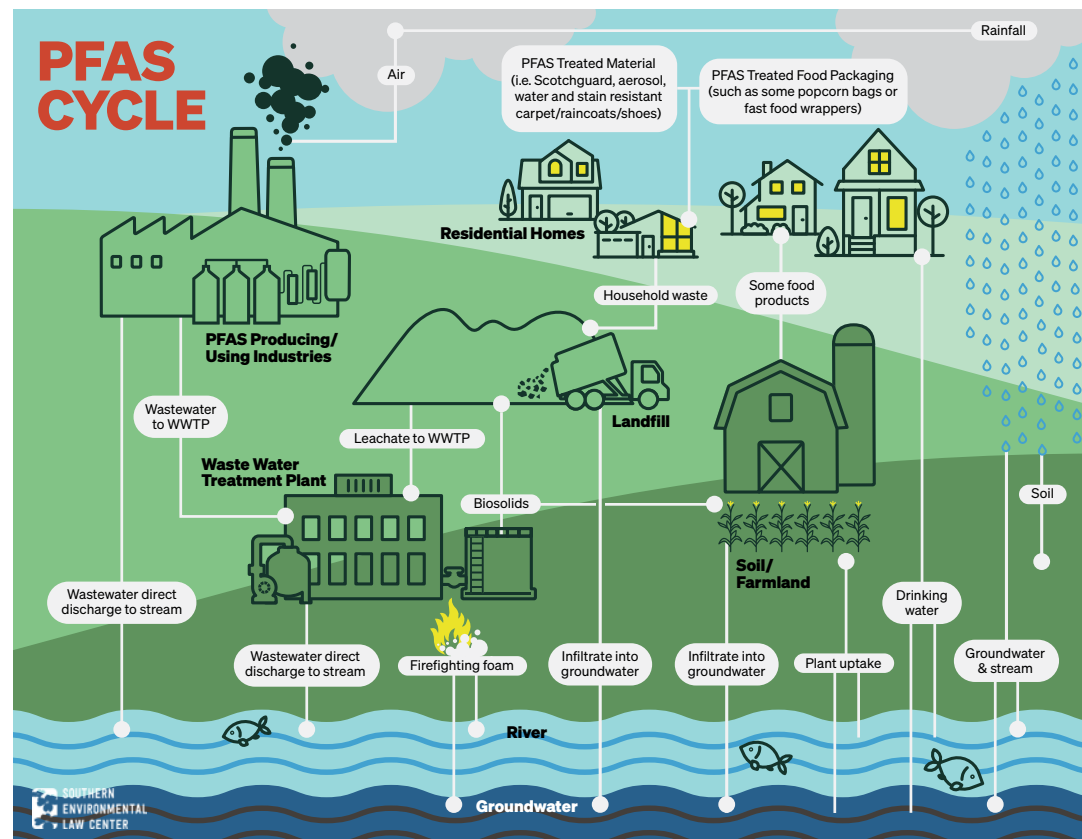
PAH-CONTAINING COAL TAR SEALANTS

PAHs are carcinogenic compounds that are harmful to human health, wildlife, and creeks and rivers. Coal Tar Sealants, which are used on driveways and parking lots, have high levels of these toxic compounds. Studies have shown that residences adjacent to parking lots with coal-tar-based sealcoat have PAH concentrations in

house dust that are 25 times higher than that of residences not adjacent to coal-tar-based parking lots.⁹ Young children (ages 0-6) are particularly vulnerable to health effects as they ingest high levels of house dust. USGS research shows cancer risk is 38 times higher for people living adjacent to coal-tar-sealed pavement than for people living adjacent to unsealed pavement.

Cancer risk is 38 times higher for people living adjacent to coal-tar-sealed pavement.

Recent studies also indicate significant negative impacts of PAHs on wildlife, including oysters, freshwater mussels, and various fish populations.^{10,11} Further, recent studies have demonstrated clear and immediate effects of coal tar sealant prohibition. Several cities and states around the country have already prohibited these substances. In one city, PAH concentrations declined by 58% within several years of a ban going into effect.¹² Cost effective alternatives to these products exist and yet local governments in Virginia lack the authority to regulate these toxic substances.¹³ The Commonwealth should work towards phasing out these toxic products, and as a first step allow local governments to prohibit these substances in order to protect their citizens and local waterways.



POLICY RECOMMENDATIONS

PFAS

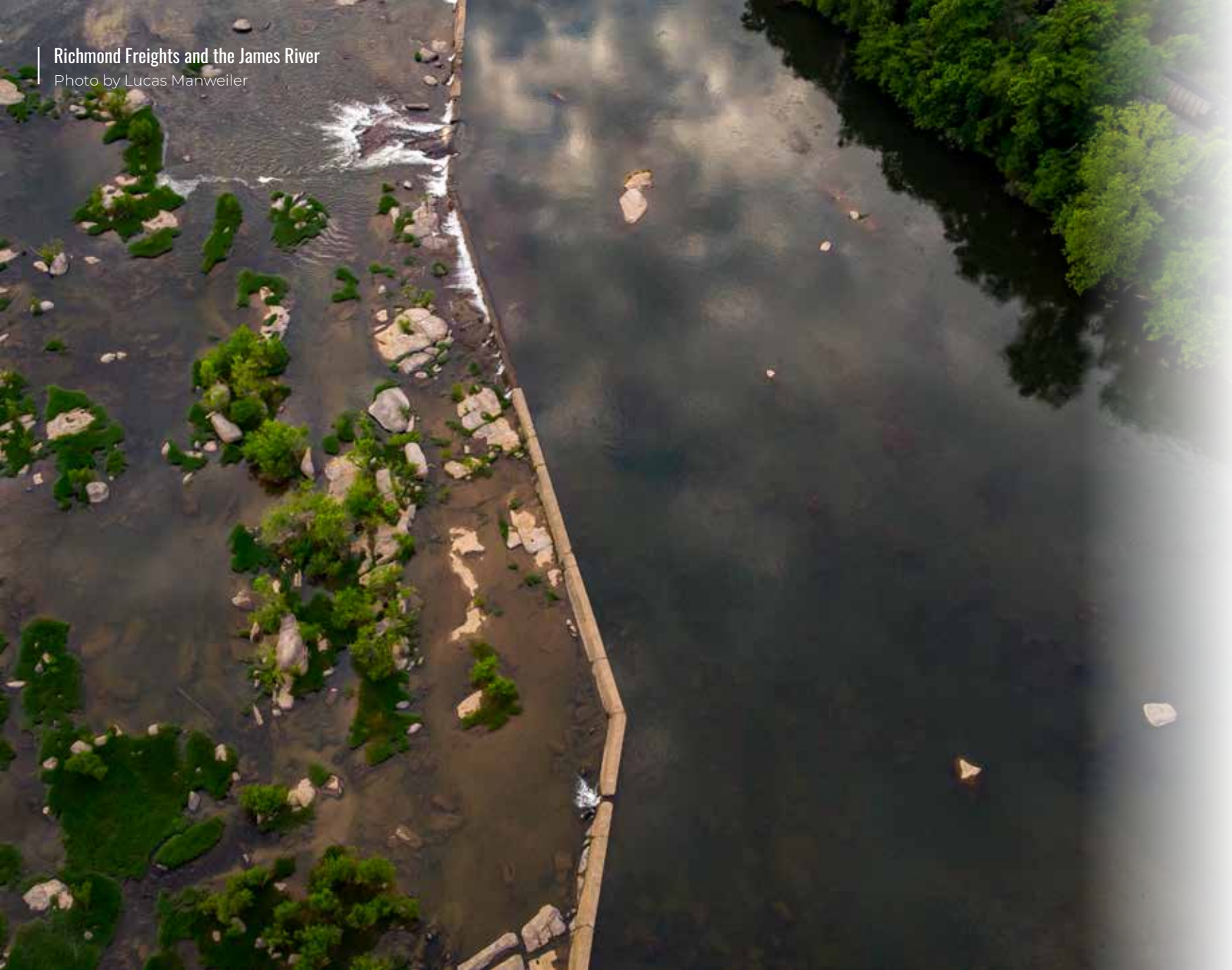
Require industrial users to disclose and control all chemicals released in their discharges through Virginia's wastewater permit and industrial pretreatment programs.

Fund DEQ and VDH to identify and eliminate potential pathways for PFAS contamination, which include wastewater discharges; land-applied biosolids; landfill leachate; air pollution; and food packaging.

Establish drinking water standards for PFAS and other toxic chemicals that fully protect public health.

COAL TAR SEALANTS

Provide a local option to regulate or prohibit coal tar sealants.



EXECUTIVE SUMMARIES & CONTACT INFORMATION

ADDRESSING STATEWIDE FLOOD RISK EQUITABLY

Virginians are already seeing climate change impacts, from sea level rise along our coastlines to increased rainfall and flooding statewide. Over the past several years, state leaders have created new policies and programs to address increasing flood risk. Moving forward, we must ensure the involvement of low-income, rural, and tribal communities in flood-prone areas from the start. Given the cost of adaptation, consistent, long-term, and dedicated funding with transparent oversight must be identified. To ensure a flood resilient future for all Virginians, we need coordinated and equitable flood resilience planning and adaptation with adequate oversight and natural resource protections.

Jay Ford // Chesapeake Bay Foundation // jford@cbf.org
Emily Steinhilber // Environmental Defense Fund // esteinhilber@edf.org
Skip Stiles // Wetlands Watch // skip.stiles@wetlandswatch.org

SEQUESTERING CARBON THROUGH OUR NATURAL RESOURCES

An Intergovernmental Panel on Climate Change special report emphasized the role that the land and water sector can and must play as part of the comprehensive strategy to tackle climate change. Virginia can sequester atmospheric carbon in our forests, soils, and wetlands, not only to meet our climate obligations but also to enhance Virginia's air and water quality. Furthermore, increasing carbon content in our soils makes them more productive and drought resistant for Virginia's farmers. By setting targets and adopting policies to encourage sequestration, while reducing barriers and creating incentives to carbon markets, we can help meet climate and water quality goals while spurring economic development around the Commonwealth.

Jay Ford // Chesapeake Bay Foundation // jford@cbf.org
Bryan Hofmann // Friends of the Rappahannock // bryan.hofmann@riverfriends.org

FLOOD & CLIMATE RESILIENCY

VCN POINT OF CONTACT

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

ADDRESSING STATEWIDE FLOOD RISK EQUITABLY

FLOOD & CLIMATE RESILIENCY

Jay Ford // Chesapeake Bay Foundation // jford@cbf.org
Emily Steinhilber // Environmental Defense Fund // esteinhilber@edf.org
Skip Stiles // Wetlands Watch // skip.stiles@wetlandswatch.org

EXECUTIVE SUMMARY

Virginians are already seeing climate change impacts, from sea level rise along our coastlines to increased rainfall and flooding statewide. Over the past several years, state leaders have created new policies and programs to address increasing flood risk. Moving forward, we must ensure the involvement of low-income, rural, and tribal communities in flood-prone areas from the start. Given the cost of adaptation, consistent, long-term, and dedicated funding with transparent oversight must be identified. To ensure a flood resilient future for all Virginians, we need coordinated and equitable flood resilience planning and adaptation with adequate oversight and natural resource protections.

CHALLENGE

Climate-induced flooding threatens the lives, livelihoods, and property of communities across the Commonwealth. Coastal Virginia faces the highest rate of relative sea level rise on the Atlantic coast.¹ Without action, up to 89% of Virginia's coastal wetlands could be permanently inundated by 2080.² Within the next 60 years, nearly 1 million coastal Virginians will be at risk of major coastal flooding and face flood damages costing up to \$5.7 billion annually.³ Increased flooding

threatens the gains we have made on water quality and the long term investment in a restored Chesapeake Bay. The chronically underserved and under-resourced communities least able to adapt, plan, and invest in preparedness and protection face the greatest risks from climate change while simultaneously facing compound threats of discrimination.

Within the next 60 years, nearly 1 million coastal Virginians will be at risk of major coastal flooding and face flood damages costing up to \$5.7 billion annually.

In recent years, leadership has taken important steps to reduce flood risk and build flood resilience. Virginia joined the Regional Greenhouse Gas Initiative (RGGI) in 2020 and designated 45% of proceeds to the statewide Community Flood Preparedness Fund,⁴ with 25% dedicated to low-income geographic areas. This fund, which prioritizes community scale investments and natural infrastructure, has already invested over \$70 million in flood resilience across the Commonwealth. It is increasingly oversubscribed and there is the potential for Virginia to withdraw from RGGI with no concrete plan to replace that funding.

Some communities have identified billions of dollars in needed resilience investments while many have not yet begun to calculate the costs. Virginia cannot afford to lose momentum and must ensure that this vital work continues.

SOLUTION

Climate change and increasing flood risks impact the entire Commonwealth. An equitable and comprehensive approach to flood resilience is needed to protect Virginia's people, places, and resources.

The continued prioritization and involvement of low-income, rural, and tribal communities in flood resilience planning and adaptation is essential. Locality capacity to complete resilience planning and implementation is typically minimal, so additional technical assistance and support by agency staff is needed.

Virginia must stay in RGGI in order to maintain funding for the Community Flood Preparedness Fund. But regardless of the future of RGGI in Vir-

ginia, localities will need additional consistent, long-term, and dedicated funding and financing strategies to meet the scale of the need. This should include appropriation of general funds as well as the utilization of additional federal funding streams. Additional transparency and oversight of adaptation resources guarantee that they are allocated equitably and in coordination with statewide flood resilience planning and natural resource priorities. Cross-agency collaboration is critical for flood planning success and requires clear leadership, including a Chief Resilience Officer and Special Assistant for Coastal Adaptation and Protection, as well as staff to advance this work.

Virginia is the first state to include sea level rise in its tidal wetlands permitting and the Chesapeake Bay Preservation Act, but we could lose the majority of our tidal wetlands and coastal shoreline by mid-century without vigorous enforcement of these regulations. This necessitates more consistency across planning documents and program guidelines, as well as education by agency staff.

POLICY RECOMMENDATIONS

Direct DCR to apply fair treatment and meaningful involvement of low-income, rural, and tribal communities in flood-prone areas in program planning, funding mechanisms, and technical assistance, in coordination with DCR's existing and future outreach and engagement efforts related to the Coastal Resilience Master Plan and the statewide master planning process.

Maintain Virginia's participation in the Regional Greenhouse Gas Initiative and that 45% of revenues generated from RGGI continue to be allocated to the CFPF.

Identify additional consistent, long-term, and dedicated funding – with transparent oversight of expenditures and cross-agency coordination – to address flood risk and advance flood resilience.

Increase staff capacity at multiple agencies (including at least 2 outreach and engagement staff at DCR, 2 Chesapeake Bay Preservation Act technical assistance staff at DEQ, and 1 Tidal Wetlands Act technical assistance staff at VMRC) to educate localities and relevant boards on changing regulations and provide direct technical assistance to local and regional governments for flood resilience planning and adaptation.

Incorporate climate change in long-term planning, such as comprehensive plans.

Silhouette of a couple on Buckroe Beach, Hampton

Photo by Lori A Cash

SEQUESTERING CARBON THROUGH OUR NATURAL RESOURCES

FLOOD & CLIMATE RESILIENCY

Jay Ford // Chesapeake Bay Foundation // jford@cbf.org
Bryan Hofmann // Friends of the Rappahannock // bryan.hofmann@riverfriends.org

EXECUTIVE SUMMARY

An Intergovernmental Panel on Climate Change special report emphasized the role that the land and water sector can and must play as part of the comprehensive strategy to tackle climate change.¹ Virginia can sequester atmospheric carbon in our forests, soils, and wetlands, not only to meet our climate obligations but also to enhance Virginia's air and water quality. Furthermore, increasing carbon content in our soils makes them more productive and drought resistant for Virginia's farmers. By setting targets and adopting policies to encourage sequestration, while reducing barriers and creating incentives to carbon markets, we can help meet climate and water quality goals while spurring economic development around the Commonwealth.

CHALLENGE

Sequestering atmospheric carbon is a necessary component of the climate solution, yet Virginia continues to see significant losses across natural resource sectors. Despite obligations in the Watershed Implementation Plan² and in statute for 'no net loss', wetlands continue to disappear from year to year. Virginia's Coastal Resilience Master Plan projects that 49% of existing coastal wetlands will disappear by 2060 and 89% by 2080.³ Similarly, forest canopy across the Commonwealth continues to disappear at a staggering rate with over 189,000 acres between 2014 and 2018 in our Chesapeake Bay watershed alone (see INCREASING INVESTMENT IN TREES, page 43).

Virginia's Coastal Resilience Master Plan projects that 49% of existing coastal wetlands will disappear by 2060.

In recognition of the need to accelerate sequestration efforts, the General Assembly passed SB 1374 in 2021, creating a task force to study carbon sequestration through forests, soil, and wetlands. The resultant report provided to the General As-

sembly summarized the opportunity saying, "by capturing and storing carbon, communities can help offset emissions and mitigate the effects of climate change such as increased severe weather, wildfires, dangerous heatwaves, sea level rise, and diminished air and water quality."⁴

Unfortunately, challenges presented by the pandemic and the change in administration prevented the workgroup from fully addressing its charge. Key items remain unaddressed, such as exploring the feasibility and efficacy of short- and long-term sequestration targets for Virginia's natural and working lands, and developing policy recommendations for state land and marine resource use. Resolving these issues is a necessary step in helping Virginia further our sequestration efforts as well as ensuring Virginia is primed to take advantage of funding opportunities from the federal government and private sector.

SOLUTION

Growing recognition of carbon sequestration as a necessary component of our climate change response has driven an increase in the value of carbon trading credits and new incentive programs. These opportunities can help Virginia to meet our existing natural resource objectives while simultaneously drawing down atmospheric carbon – but only if we are primed to take advantage. Continuing the work of the carbon sequestration workgroup is needed to prepare the Commonwealth to be a leader in this space.

We must first establish a baseline for sequestration in the Commonwealth and develop achievable targets for increasing sequestration in the coming years. Using the best available science, Virginia should set natural resource sector goals to help shape sequestration policy moving forward. Additionally, each agency should assess their assets and develop a plan to increase carbon sequestration on Virginia's land and waters that supports our sequestration targets.

One of the carbon sequestration workgroup recommendations was, "increasing support for existing programs with carbon sequestration co-benefits."⁵ Programs such as Virginia's Agricultural Cost Share program, Conservation Reserve Enhancement Program, Urban and Community Forestry grant program, Virginia Pollinator Smart Program, and many other initiatives include the co-benefit of sequestering carbon. Ensuring robust funding for these programs is essential, but agencies should also look for ways to further encourage and increase sequestration within their respective programs.

The Virginia Phase III Watershed Implementation Plan (WIP) highlights the need for the Healthy Watershed Forest Project as a key strategy for achieving our water quality goals through accelerating the pace of forest land retention and restoration.⁶

Finally, carbon markets are difficult to navigate, which means farmers and landowners require technical assistance accessing the financial incentives available to increase carbon in their soils and forests. Virginia should assist farmers/landowners with accessing markets.

POLICY RECOMMENDATIONS

Virginia agencies should create an inventory of their assets current carbon sequestration value and provide that information to DEQ to serve as part of Virginia's carbon inventory.

Virginia should develop and adopt carbon sequestration targets for the Commonwealth's forests, wetlands, and agricultural lands based upon the best available science.

Virginia agencies should develop recommendations to increase long term carbon sequestration within existing programs.

Tools and resources should be developed to help landowners and agricultural producers access carbon markets.

Photo by Erik Moore |



LAND & WILDLIFE CONSERVATION

Conservation of Virginia's lands is crucial to protecting our natural resource base. Protected lands directly support clean water and air, healthy wildlife populations, beautiful views, food security, culture and history, a sense of place, and improved physical and mental health. Virginia's landscapes also help support the backbone of its economy: agriculture, forestry, and tourism. However, land conservation efforts are consistently under development pressure. There are many ways to help ensure landscapes are protected for their many benefits including expanding local food systems, conserving tree canopies, connecting wildlife migration corridors, rebuilding native aquatic populations, and keeping cultural history and resources intact for future generations to appreciate.

LAND CONSERVATION & OUTDOOR RECREATION SUMMARIES & CONTACT INFORMATION	29
INVESTING IN VIRGINIA'S HERITAGE & FUTURE	31
ENSURING CONSISTENT SUPPORT FOR TRAILS & PARKS	33
PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE	35
PROTECTING HISTORIC & CULTURAL RESOURCES	37
SUPPORTING LASTING FUNDING FOR LAND CONSERVATION	39
VIRGINIA'S FLORA & FAUNA EXECUTIVE SUMMARIES & CONTACT INFORMATION	41
INCREASING INVESTMENT IN TREES	43
INVESTING IN WILDLIFE CROSSINGS & HABITAT CONNECTIVITY	45
EXPEDITING THE OYSTER'S RECOVERY	47
PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS	49
BUILDING SUSTAINABLE FISHERIES	51

EXECUTIVE SUMMARIES & CONTACT INFORMATION

INVESTING IN VIRGINIA'S HERITAGE & FUTURE

Across Virginia's coast, piedmont, and mountains, we have a wealth of natural and cultural assets that are closely tied to the state's heritage and integral to its future. These assets are foundational to the state's economic, social, and environmental health. Taking care of these assets and making sure they are accessible to every Virginian requires state investment in conservation. Thanks to forethought from past administrations and legislatures, Virginia has strong programs and tools. These mechanisms simply need sufficient, consistent, and dedicated funding to ensure Virginia's future generations have the kind of Commonwealth we want to leave to them.

John Eustis // New River Land Trust // nrlt@newriverlandtrust.org
Nikki Rovner // The Nature Conservancy // nrovner@tnc.org

ENSURING CONSISTENT SUPPORT FOR TRAILS & PARKS

Trails, parks, green spaces, and blue spaces are essential for communities to thrive and prosper as they create opportunities for outdoor recreation, improve public health, stimulate economic development, and key components of transportation networks. Ensuring consistent support for trails and parks will continue to make Virginia a great place to live, work, and play.

Cat Anthony // Virginia Capital Trail Foundation // cat@virginiacapitaltrail.org
Elliott Caldwell // East Coast Greenway Alliance // elliott@greenway.org
Justin Doyle // James River Association // jdoyle@thejamesriver.org
Brantley Tyndall // Virginia Bicycling Federation // president@vabike.org

PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE

Farmland preservation and promotion of high-value organic and climate-smart commodities keep farmland in production, bring prosperity to farming communities, and facilitate agriculture's contribution as a climate change solution. Farmland managed sustainably with practices like cover crops, vegetated streamside buffers, and no/low-tillage improves soil health with the same benefits as wetlands – improved water quality and wildlife habitat. To preserve our farmland, Virginia must embrace smart-growth, permanently protect agricultural land, advance smart solar, enhance farmland access, and create opportunities for the next generation of farmers, particularly the historically marginalized.

Parker Agelasto // Capital Region Land Conservancy // parker@capitalregionland.org
Francesca Costantino // Virginia Association for Biological Farming // labela_francesca@yahoo.com
Michael Kane // Piedmont Environmental Council // mkane@pecva.org

PROTECTING HISTORIC & CULTURAL RESOURCES

From Chief Powhatan's capital, Werowocomoco, to American Revolution and Civil War battlefields, to Rosenwald schools and sites related to the struggle for Civil Rights, Virginia's unique and diverse array of historic and cultural resources tell the story of our Commonwealth and nation. Robust support for existing programs as well as exploration of broadening preservation tools available to protect these resources is critically important to ensure their benefit to current and future generations and supports key industries, including agriculture and tourism.

Max Hokit // American Battlefield Trust // mhokit@battlefields.org
Elizabeth Kostelny // Preservation Virginia // ekostelny@preservationvirginia.org

SECURING LASTING FUNDING FOR LAND CONSERVATION

Virginian's identities and quality of life are rooted in our land. We take pride in our stunning and iconic landscapes: the rugged Appalachian Mountains, fertile Piedmont, tidal rivers flowing across the coastal plain to the Chesapeake Bay. Virginia's natural resources support local economies; form the foundation of our culture and diverse communities; and sustain the health of our people, our wildlife, and our water. But the demands facing Virginia's landscapes are growing and Virginia needs to increase the scale and speed of its conservation efforts to ensure these benefits for future generations. Establishing a dedicated funding source to supplement regular general fund dollars will equip Virginia to face these challenges directly.

Christopher Leyen // Virginia League of Conservation Voters // cleyen@valcv.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org

Umber Dawn, Bull Run Overlook

Photo by Steve Owens



LAND CONSERVATION & OUTDOOR RECREATION

VGN POINT OF CONTACT

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

INVESTING IN VIRGINIA'S HERITAGE & FUTURE

LAND CONSERVATION & OUTDOOR RECREATION

John Eustis // New River Land Trust // nrlt@newriverlandtrust.org
Nikki Rovner // The Nature Conservancy // nrovner@tnc.org

EXECUTIVE SUMMARY

Across Virginia's coast, piedmont, and mountains, we have a wealth of natural and cultural assets that are closely tied to the state's heritage and integral to its future. These assets are foundational to the state's economic, social, and environmental health. Taking care of these assets and making sure they are accessible to every Virginian requires state investment in conservation. Thanks to forethought from past administrations and legislatures, Virginia has strong programs and tools. These mechanisms simply need sufficient, consistent, and dedicated funding to ensure Virginia's future generations have the kind of Commonwealth we want to leave to them.

CHALLENGE

Given the growing popularity of outdoor recreation and public interest in nature-based experiences, now is the time to expand conservation efforts. We can't wait until the challenges of population growth, development pressures, climate change, and historic inequities become overwhelming. Since 2000, more than 335,000 acres of Virginia farmland have been paved over or otherwise converted to non-agricultural uses (see PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE, page 35).¹ Without conservation we will lose the places that grow our food, ensure the quality of our drinking water supplies, preserve habitat for wildlife, sequester carbon, and provide healthy outdoor spaces for Virginia families.

Recent state budget spending on natural resources, state parks, and recreation ranks Virginia 4th to last nationally.

Across the demographic spectrum, Virginians have a conservation ethic. However, recent state budget spending on natural resources, state parks, and recreation is less than one percent; this ranks Virginia 4th to last nationally.² The need for additional funding is also called for

throughout the Virginia Outdoors Plan 2018. The consequences of this lack of spending are real: lost opportunities to conserve more land and insufficient public access to lands that are already protected.

Virginia needs to fund existing and proven conservation mechanisms commensurate with demand and to match other sources of funding. Increasing state funding for conservation will leverage unprecedented federal dollars through the Great American Outdoors Act as well as strong private sector support for conservation. If state matching funds are not provided to unlock these federal dollars, Virginia could miss out.

Our conservation efforts must acknowledge historic and current disparities in terms of resources for some communities and treatment of segments of the population most notably native peoples and more broadly people of color. We need to expand conservation efforts in order to be able to begin to address injustices and inequalities past and present.

SOLUTION

Fortunately, the Commonwealth has effective land conservation programs already in place, but they must be supported consistently at much higher levels to meet the growing need.

Virginia has one of the most successful and progressive private land conservation programs in the country – the Land Preservation Tax Credit (LPTC). The LPTC encourages voluntary land conservation by providing taxpayers who make gifts of land or conservation easements tax credits equal to 40% of the value of their donated interest.

The Virginia Land Conservation Foundation (VLCF) provides state matching grants on a competitive basis for the protection of open spaces and parks, natural areas, historic areas, and farmland and forest preservation.

The Virginia Farmland Preservation Fund and Virginia Battlefield Preservation Fund provide matching funds to leverage significant local, federal and private funding sources to protect the state's best farmland, tell a more complete history, and preserve historically-significant places. Additionally, funding is needed for the new Black, Indigenous and People of Color (BIPOC) Historic Preservation Fund to improve preservation of BIPOC historic and cultural resources.

These proven, effective and progressive tools must be funded robustly to meet the demands of our time.

In addition, these essential programs must be augmented by a permanent, dedicated source of revenue that serves a wider array of outdoor recreation, trails, pocket parks, and cultural site expansion and development projects. Such a program that supports urban conservation and underserved communities with a sustained source of reliable funds will allow localities to better plan their outdoor recreation infrastructure investments with certainty that their needs will be met. One potential way to build this new program out of an existing tool is to build off of the Virginia Outdoor Foundation's Get Outdoors program, which is much more accessible for small rural and urban localities and nonprofit organizations than Virginia's other grant programs.

POLICY RECOMMENDATIONS

No changes should be made to the Land Preservation Tax Credit (LPTC), a proven and effective land conservation tool.

Support Virginia conservation agencies: additional staff at the Virginia Outdoors Foundation, Department of Conservation and Recreation, Department of Forestry, and Department of Wildlife Resources to keep up with land conservation opportunities with willing sellers. Provide adequate and timely support from the Office of the Attorney General and Department of General Services.

Adequately support real estate staff at each of these agencies.

Virginia's Land Conservation Grant Programs:

- \$20 million per year for the Virginia Land Conservation Foundation
- \$5 million per year for the Virginia Farmland Preservation Fund
- \$5 million per year for the Virginia Battlefield Preservation Fund
- \$5 million per year for the new Virginia BIPOC Historic Preservation Fund

\$20 million per year to extend Virginia Outdoors Foundation's Get Outdoors program (GO) throughout the Commonwealth.

Brothers, Warren County

Photo by Richard Koth



ENSURING CONSISTENT SUPPORT FOR TRAILS & PARKS

LAND CONSERVATION & OUTDOOR RECREATION

Cat Anthony // Virginia Capital Trail Foundation // cat@virginiacapitaltrail.org
Elliott Caldwell // East Coast Greenway Alliance // elliott@greenway.org
Justin Doyle // James River Association // jdoyle@thejamesriver.org
Brantley Tyndall // Virginia Bicycling Federation // president@vabike.org

EXECUTIVE SUMMARY

Trails, parks, green spaces, and blue spaces are essential for communities to thrive and prosper as they create opportunities for outdoor recreation, improve public health, stimulate economic development, and key components of transportation networks. Ensuring consistent support for trails and parks will continue to make Virginia a great place to live, work, and play.

CHALLENGE

For too long, trails and parks have been underfunded. Based on a recent presentation from the Department of Conservation and Recreation (DCR), the agency has a maintenance backlog of over \$240 million.¹ We need to invest in our parks and trails so future generations can continue to utilize them instead of letting these assets fall into disrepair.

| Access to the outdoors is not shared equitably.

For too many Virginians, parks, green spaces, and bodies of water are inaccessible due to distance, uneven distribution across the Commonwealth,

and lack of facilities compliant with the Americans with Disabilities Act. Within communities, race and income play a role in determining the quality and size of parks and green spaces individuals have access to in the United States. More affluent and predominantly White neighborhoods tend to have access to higher quality park systems with more acreage than those with larger low-income and Latinx or Black populations.² We must prioritize addressing inequitable access to parks, green spaces, and bodies of water in Virginia by identifying places where access is poor and making investments in new parks, green spaces, water access, and trails.

SOLUTION

Parks and trails have been overwhelmed with an increase of usage over the past year which justifies the need for consistent funding to reach all communities and maintain existing infrastructure.³ Equitable access to outdoor spaces promotes physical activity, which includes many health benefits, including decreases in obesity, cardiovascular disease, and diabetes.⁴ Currently, access to the outdoors is not shared equitably;

the need to create a statewide outdoor access equity model is the first step in determining where investments in parks and trails are essential.

Investments in trails, public access infrastructure, and associated facilities must be constructed to accommodate all ability levels and promote inclusion that connect parks and green spaces

to all. A state-wide trail designation should be created, similar to Florida's Designation System, to ensure an inclusive interconnected trail system and to strengthen public awareness and protection around our trail assets.⁵ Protection of green spaces is linked to protecting air quality, which helps decrease respiratory and cardiovascular diseases.⁶

Hikers at Dark Hollow Falls, Shenandoah

Photo by Hugh Kenny



POLICY RECOMMENDATIONS

\$41M per year in recurring funding, adjusted for inflation to 2022 dollars, for the Office of Trails to plan, construct, and maintain trails in the Commonwealth in VDOT.

\$1M for grant match funds for low-income communities, communities of color, and smaller localities of population less than 25,000 for better connectivity to transportation and recreation, to be administered by VDOT.

Establish a State Trail Designation Program and direct resources toward planning and constructing state trails through the Office of Trails.

\$57M per year for the Department of Conservation and Recreation's State Parks to support essential staffing, programs, and backlog of maintenance issues.

Direct the Department of Conservation and Recreation to create a statewide Outdoor Access Equity Model with stakeholder input.

PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE

LAND CONSERVATION & OUTDOOR RECREATION

Parker Agelasto // Capital Region Land Conservancy // parker@capitalregionland.org
 Francesca Costantino // Virginia Association for Biological Farming // labella_francesca@yahoo.com
 Michael Kane // Piedmont Environmental Council // mkane@pecva.org

EXECUTIVE SUMMARY

Farmland preservation and promotion of high-value organic and climate-smart commodities keep farmland in production, bring prosperity to farming communities, and facilitate agriculture's contribution as a climate change solution. Farmland managed sustainably with practices like cover crops, vegetated streamside buffers, and no/low-tillage improves soil health with the same benefits as wetlands – improved water quality and wildlife habitat.¹ To preserve our farmland, Virginia must embrace smart-growth, permanently protect agricultural land, advance smart solar, enhance farmland access, and create opportunities for the next generation of farmers, particularly the historically marginalized.

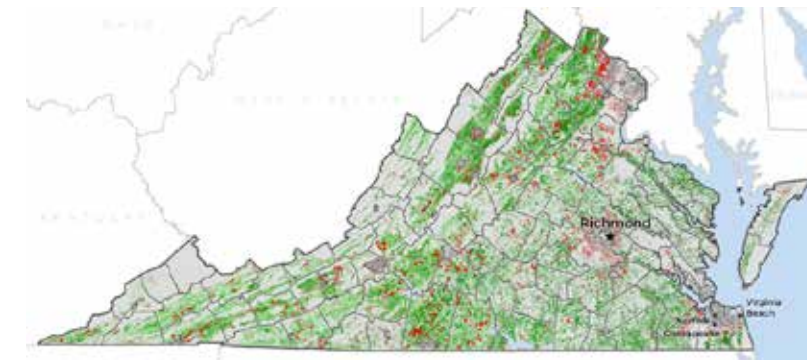
CHALLENGE

Agriculture provides food security, recreation, tourism, wildlife habitat, biodiversity, flood mitigation, improved water quality, carbon sequestration, and soil stabilization. Of 8.2 million acres of agricultural land in Virginia, 3.3 million acres (40%) is in the nationally significant category best suited for growing food.

Virginia's agricultural land is under threat. Between 2001 and 2016, 340,000 acres of farmland have been developed, 120,000 acres being nationally significant prime farmland soils. Virginia's conversion threat is higher than its policy response.² Virginia is 7th and 12th respectively among US States in terms of most acres and largest percent of agricultural land to be lost to conversion by 2040. Rockingham County around Harrisonburg is 5th among US counties in terms of largest percent of agricultural land to be converted; development hotspots around Richmond in Chesterfield County and the I-495 Capital Beltway in Fairfax and Prince William Counties are also at risk. Pittsylvania County stands to lose the most number of acres of agricultural land to development.³

SOLUTION

Grassfed, climate-smart, regenerative,⁴ and organic production practices provide a premium product and marketing opportunities to capture more value, and allow a farmer to make a livelihood from farming, essential for keeping in production.⁵ These same practices build soil health for environmental benefits to water quality and the climate.



Conversion of non-federal farmland to UHD (Urban and Highly Developed) and LDR (Low-Density Residential) land uses from 2001-2016.

*Farmland is composed of cropland, pastureland, and woodland associated with farms.
 **The productivity, versatility, and resiliency (PVR) index targets high-quality agricultural land.

Technical assistance and grants can help small and underserved farms transition to higher value production.

In 2021, the Office of Farmland Preservation (OFP) allocated \$270,000 in state matching funds to five local Purchase of Development Rights (PDR) programs, worked with local PDR programs to permanently preserve 152 acres in one easement of working farm and forest lands, and launched a new and improved Virginia Farm Link website at virginiafarmlink.org to connect farm seekers to available land.⁶ From the start of the program in 1999, Virginia Land Conservation Foundation (VLCF) has funded 40 farmland preservation programs totaling \$9,338,622, including 9 projects in 2021 totaling \$2,746,876.⁷

Committed state action is an essential response to farmland loss. Cost and administrative burden of participating in PDR programs for localities must be lowered. Programs to purchase agricultural conservation easements could do more with adequate funding and greater flexibility. The Commonwealth must maintain the successful Land Preservation Tax Credit and continue to regularly issue bonds for state conservation agency land acquisition.

POLICY RECOMMENDATIONS

Set a statewide goal for permanent farmland protection and develop a state farmland plan.

\$2 million per year to the Virginia Land Conservation Foundation (VLCF) for farmland preservation, \$5 million per year to Virginia Farmland Preservation Fund for farmland PDR yearly, and \$1 million match per year for federal programs for agricultural and conservation easements.

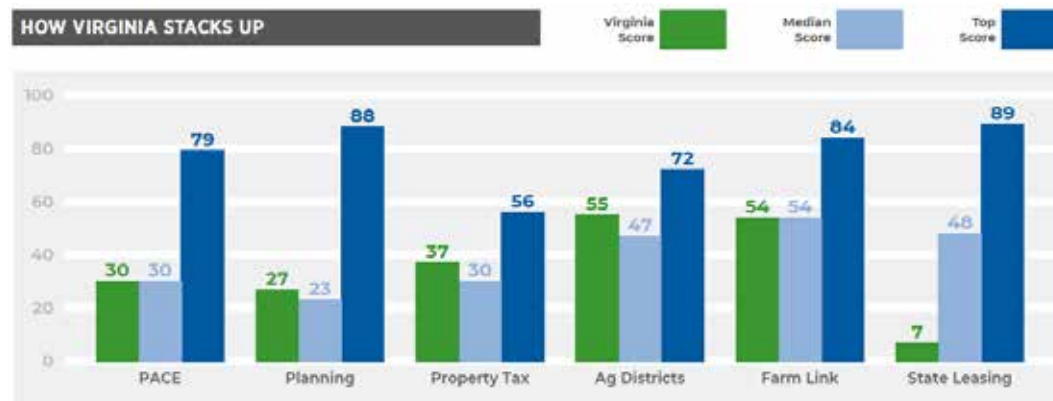
Lower Purchase of Development Rights (PDR) programs match to 25% and allow nonprofit land trusts to hold easements.

\$500,000 yearly through the Office of Farmland Preservation (OFP) for helping frame PDR ordinances for localities and advising on best local zoning practices on preserving farmland in situations of Low-Density Residential land-use.

Establish \$10 million small meat processing fund with federal recovery funding.

\$250,000 per year for the Agriculture and Forestry Industries Development Fund infrastructure program and \$250,000 for technical assistance and grants for a new VDACS program for small and underserved farms to transition to higher value production yearly.

Virginia ranks 7th among US states for most acres of agricultural land to be lost to conversion by 2040.



Virginians policy scores compared to the median and the highest scores achieved by all states that have implemented each policy.

PROTECTING HISTORIC & CULTURAL RESOURCES

LAND CONSERVATION & OUTDOOR RECREATION

Max Hokit // American Battlefield Trust // mhokit@battlefields.org
Elizabeth Kostelny // Preservation Virginia // ekostelny@preservationvirginia.org

EXECUTIVE SUMMARY

From Chief Powhatan's capital, Werowocomoco, to American Revolution and Civil War battlefields, to Rosenwald schools and sites related to the struggle for Civil Rights, Virginia's unique and diverse array of historic and cultural resources tell the story of our Commonwealth and nation. Robust support for existing programs as well as exploration of broadening preservation tools available to protect these resources is critically important to ensure their benefit to current and future generations and supports key industries, including agriculture and tourism.

We recognize that certain historic resources preserve the memory of racial injustice, and we support efforts to relocate or recontextualize these resources as appropriate.

CHALLENGE

State funding for the programs below is an irreplaceable tool in preserving Virginia's historic places and supporting heritage tourism.

Historic Rehabilitation Tax Credit (HRTC)

A catalytic community redevelopment and economic development tool for urban and rural communities that face challenges regularly. Experience and studies¹ have demonstrated that construction and related activities associated with HRTC projects generate \$4.20 to \$5.30 of economic impact for every \$1.00 of tax credit.

Virginia Battlefield Preservation Fund grants, often matched with Federal dollars, preserved 441 acres in the last year alone.

LAND CONSERVATION

The Virginia Land Conservation Fund (VLCF), the Virginia Battlefield Preservation Fund (VBPF), and the Land Preservation Tax Credit are the cornerstones of land conservation in Virginia. The VLCF funds a range of conservation projects

in rural and urban areas. VBPF is targeted exclusively toward preserving historic battlefields. VBPF grants are often matched with federal dollars from the National Park Service's American Battlefield Protection Program, resulting in the preservation of 441 acres in the last year alone.³

AFRICAN AMERICAN AND VIRGINIA INDIAN RESOURCES

The creation of the Virginia Black, Indigenous, and People of Color Historic Preservation Fund by the General Assembly in 2021 will provide grants to protect land and sites which have historic significance for BIPOC communities. Initially proposed for \$10 million over the biennium budget, funding is currently at \$5 million for FY 2023/24.

DATACENTER DEVELOPMENT

A major concern of the preservation community is the ever-growing threat from the development of datacenters. These large industrial developments take up substantial pieces of open space and have all too often been approved in locations affecting sensitive historic sites. Preservation Virginia recently recognized datacenter developments as one of the most pressing threats to historic sites in the commonwealth.

SOLUTION

The state has tremendous opportunities to advance the preservation of Virginia's historic and cultural resources by enhancing our existing programs and initiatives. Given the proven return on the Commonwealth's investment from the HRTC, and economic impacts of the COVID-19 pandemic, we urge the state to protect and maintain the HRTC in order to help with the state's economic recovery, and to give particular consideration to HRTC projects with the potential to benefit under-represented communities.

On the land conservation front, fully funding both VLCF and VBPF is of critical importance to helping save Virginia's battlefields and other historic sites before they are lost to development.

This year's increase in funding to VLCF is an important step forward, but even more can be done. With regard to African American and Virginia Indian resources, the recent emphasis that the General Assembly has placed on elevating under-told stories is encouraging. In particular, the creation of the new Virginia Black, Indigenous, and People of Color Historic Preservation Fund offers opportunities for a more complete telling of Virginia history by preserving BIPOC sites that have been disproportionately marginalized in the past. Increased funding, recognition, and protection for these resources across the Commonwealth is essential.

On datacenters, we recognize localities' interest in these industrial developments. However, many local governments are jumping at these opportunities at the expense of their historic, cultural, agricultural, and scenic resources and without due respect to their own well-considered zoning policies and master plans.

POLICY RECOMMENDATIONS

Protect the Historic Rehabilitation Tax Credit program.

\$20 million per year for the Virginia Land Conservation Fund and \$5 million per year for the Virginia Battlefield Preservation Fund.

Adjust the Virginia Land Conservation Fund to be accessible for the preservation of sites which highlight Virginia's culturally diverse history.

\$5 million per year for the new Virginia BIPOC Historic Preservation Fund.

Develop a state policy which requires state approval of datacenter developments over a certain size or within a certain proximity to sensitive sites. (See BOOSTING SMART GROWTH, page 59)

Cabins at Explore Park, Roanoke

Photo by Patti Black



SECURING LASTING FUNDING FOR LAND CONSERVATION

LAND CONSERVATION & OUTDOOR RECREATION

Christopher Leyen // Virginia League of Conservation Voters // cleyen@valcv.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org

EXECUTIVE SUMMARY

Virginian's identities and quality of life are rooted in our land. We take pride in our stunning and iconic landscapes: the rugged Appalachian Mountains, fertile Piedmont, tidal rivers flowing across the coastal plain to the Chesapeake Bay. Virginia's natural resources support local economies; form the foundation of our culture and diverse communities; and sustain the health of our people, our wildlife, and our water. But the demands facing Virginia's landscapes are growing and Virginia needs to increase the scale and speed of its conservation efforts to ensure these benefits for future generations. Establishing a dedicated funding source to supplement regular general fund dollars will equip Virginia to face these challenges directly.

CHALLENGE

Growing development pressures, accelerating impacts of climate change, and increasing usage of our public lands threaten to overwhelm Virginia's outdoors. Over the last few years, we have seen both the importance and desire of Virginians to get outdoors for recreation and mental health with state lands seeing record setting attendance numbers. State park attendance increased 15% from 2019 to 2020 and continued to increase from 2020 to 2021.¹ But the COVID pandemic also made obvious the inequities in access to the outdoors (see ENSURING CONSISTENT SUPPORT FOR PARKS & TRAILS, page 33) and the disproportionate health burdens carried by marginalized and underserved communities.

While Virginia's current approach to funding land conservation has had many great achievements, it is not enough to meet the growing needs of our outdoors. Indeed, Virginia funds natural resources at much lower rates than surrounding states. In FY 23 alone, Maryland has allocated over \$300 million for its Open Space Program.² That's more than double what Virginia has allocated for the Virginia Land Conservation Fund, the Farmland

Preservation Fund, the Battlefield Preservation Fund, the Black, Indigenous, and People of Color Preservation Fund, and funding for the State Trails Office combined over the next biennium. Even with record-setting revenue in the most recent budget, Virginia failed to fully fund its land conservation needs.

SOLUTION

If we are to meet the growing challenges facing the Commonwealth and address historic inequities, Virginia must establish a consistent, robust source of dedicated funding for conservation. By doing so, Virginia land conservation programs will have the support needed to achieve long-term, landscape-scale conservation, and ensure that federal funds are brought into the state.

A dedicated revenue stream can enhance our existing conservation programs and increase the scale and rapidity of projects to meet the growing demands placed on Virginia's environment. It will also allow for establishing new programs designed to specifically address conservation issues and marginalized communities that current programs are ill-equipped to address.

Eight-in-ten Virginian voters support dedicating \$300 million per year to conservation programs.

Increased funding through dedicated revenue will allow Virginia to fully capture available federal funding opportunities, such as the state-side Land and Water Conservation Fund,³ Forest Legacy Program,⁴ Agricultural Conservation Easement Program,⁵ and Readiness and Environmental Protection Integration Program,⁶ maximizing the outcomes Virginians receive for every dollar invested.

This dedicated funding must be used to supplement increased general fund appropriations for conservation initiatives. Overall funding must be increased to meet the Commonwealth's challenges.

States across the country have taken varied approaches to their dedicated funding mechanism. From dedicating a portion of marijuana sales tax revenue in Montana,⁷ dedicating a portion of existing sales tax revenue in Georgia,⁸ or sales tax on sporting goods in Texas,⁹ to real estate transfer fees in Maryland.¹⁰ The General Assembly is best equipped to find the mechanism or mechanisms best suited for Virginia and should consider all potential revenue sources. A 2021 survey showed that nearly eight-in-ten Virginia voters support dedicating \$300 million per year to conservation programs - and these

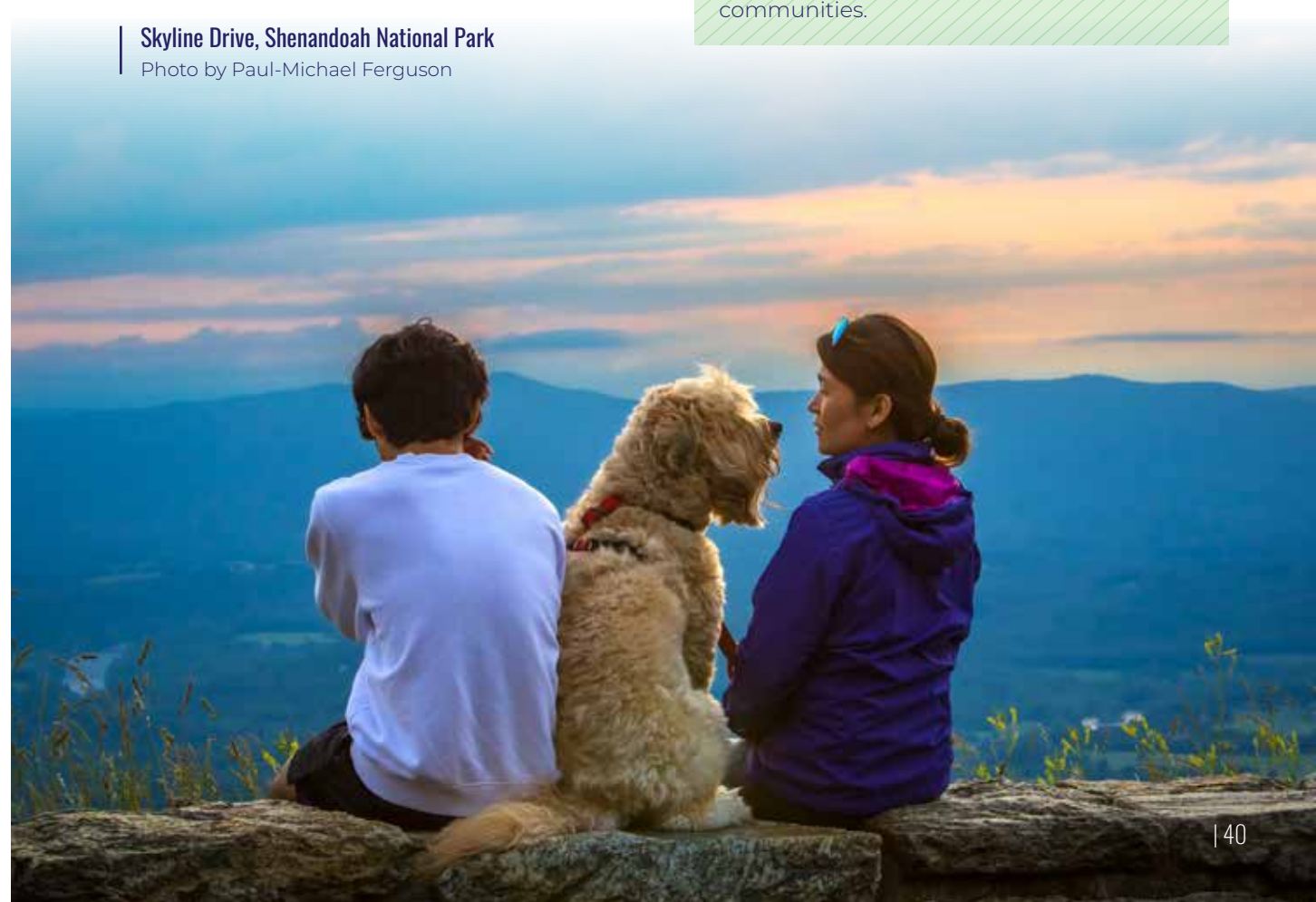
voters are represented statewide and across political party identities.¹¹

POLICY RECOMMENDATIONS

Establish a source of dedicated funding that provides a minimum of \$300 million per year to natural resource conservation. Funding should be directed to supplement existing land conservation and trail programs, and to establish and fund new programs focused on addressing access to outdoor and green spaces among marginalized and underserved communities.

Skyline Drive, Shenandoah National Park

Photo by Paul-Michael Ferguson



EXECUTIVE SUMMARIES & CONTACT INFORMATION

INCREASING INVESTMENT IN TREES

The Chesapeake Bay watershed portions of Virginia replaced 184,665 acres of forest with other land uses between 2014 and 2018; approximately 72 square miles of canopy were lost each year at a time when tree canopy is critically needed to capture stormwater, reduce flooding, create more heat resilient communities, sequester carbon, and lower energy consumption to mitigate the impacts of climate change. Virginia must invest in programs that expand tree canopy and continue updating policies to enable localities to establish conservation and replacement strategies to help them achieve their tree canopy goals.

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Ann Jurczyk // Chesapeake Bay Foundation // ajurczyk@cbf.org
Madison Teeter // Wetlands Watch // madison.teeter@wetlandswatch.org

INVESTING IN WILDLIFE CROSSINGS & HABITAT CONNECTIVITY

Wildlife corridors and habitat connectivity are crucial for ensuring ecosystem health. Wildlife must be able to move to find food and water resources, genetically diverse mates, and climate refugia. Wildlife crossings improve connectivity and reduce dangerous and costly wildlife-vehicle collisions. Virginia took steps forward in 2020 and 2021, passing bills to study and prioritize wildlife corridors. Now, we must invest in the areas identified in the forthcoming Virginia Wildlife Corridor Action Plan by creating a state funding mechanism that leverages the new and available federal dollars unlocked by the Infrastructure Investment and Jobs Act.

Courtney Hayes // Wild Virginia // courtney@wildvirginia.org
Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Zachary Sheldon // The Nature Conservancy // Zachary.Sheldon@tnc.org
Erin Sito // Wildlands Network // e.sito@wildlandsnetwork.org

Hummingbird, Winchester
Photo by Linda Jackson



EXPEDITING THE OYSTER'S RECOVERY

The native oyster (*Crassostrea virginica*) is one of the Chesapeake Bay's keystone species and of great ecological, economical, and historical importance in the Commonwealth. Fortunately, during the 2019 legislative session, the General Assembly authorized an increased investment in efforts to improve the pace of ecological and fishery restoration efforts. These efforts support maintenance of the state's commercial fishery and the wide array of ecosystem services provided by healthy oyster habitats. With additional enhancement activities taking place and growth in the wild population of oysters throughout the state, now is the time to further investigate the success of these efforts and plan for the successful management of this resource in the future.

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Chris Moore // Chesapeake Bay Foundation // cmoore@cbf.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org

PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS

Freshwater mussels are an important part of Virginia's natural heritage and benefit streams and rivers by filtering water and removing pollutants such as nitrogen. These valuable organisms have shown rapid decline, and investments and strategies are needed to protect and restore these populations.

Erin Reilly // James River Association // ereilly@thejamesriver.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

BUILDING SUSTAINABLE FISHERIES

Our estuarine fisheries are important both culturally and economically to the Commonwealth. The blue crab (*Callinectes sapidus*) fishery has seen significant reductions in harvests in recent years. Even at a reduced level of approximately 18 million pounds, the dockside value of the blue crab fishery alone was approximately \$35 million. Stakeholders and fishery managers have identified specific challenges that are currently reducing the capacity of this fishery to provide a multitude of benefits to the state. Targeted investments and policies pertaining to this fishery resource can help ensure the sustainability of this fishery from both an ecological and economic perspective.

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Chris Moore // Chesapeake Bay Foundation // cmoore@cbf.org
Erin Reilly // James River Association // ereilly@thejamesriver.org

VGN POINT OF CONTACT

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

INCREASING INVESTMENT IN TREES

VIRGINIA'S FLORA & FAUNA

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Ann Jurczyk // Chesapeake Bay Foundation // ajurczyk@cbf.org
Madison Teeter // Wetlands Watch // madison.teeter@wetlandswatch.org

EXECUTIVE SUMMARY

The Chesapeake Bay watershed portions of Virginia replaced 184,665 acres of forest with other land uses between 2014 and 2018; approximately 72 square miles of canopy were lost each year at a time when tree canopy is critically needed to capture stormwater, reduce flooding, create more heat resilient communities, sequester carbon, and lower energy consumption to mitigate the impacts of climate change. Virginia must invest in programs that expand tree canopy and continue updating policies to enable localities to establish conservation and replacement strategies to help them achieve their tree canopy goals.

CHALLENGE

Virginia continues to lose forests and urban tree canopy at an alarming rate due to construction, road expansion, tree removal by homeowners, and poorly sited utility scale solar projects (see GETTING IT RIGHT WITH UTILITY SCALE SOLAR, page 85). Canopy losses negatively impact the quality of life for Virginia residents,¹ particularly Black communities, and biodiversity needed to support wildlife populations.^{2,3}

Due to climate change, the mid-Atlantic states will be warmer and wetter.⁴ A warmer climate increases the likelihood of short, high-intensity rain events that cause flash flooding, overwhelm existing stormwater management systems, and cause combined sewer overflow (CSOs) systems to discharge untreated sewage into the James and Potomac rivers. Urban trees can reduce stormwater runoff, mitigate the risk of flood, and improve water quality in developed areas.⁵ According to the US Forest Service, America's forests sequester 866 million tons of carbon a year, which is roughly 16% of the US annual emissions.⁶ Formerly redlined areas in Richmond that have more heat-absorbing asphalt and less tree canopy were found to be up to 16 degrees Fahrenheit hotter in the summer than the more

treed sections of the city. These urban areas that are hotter than outlying areas are referred to as "heat islands."⁷ The increased temperatures also correlate to more heat-related emergency room visits.⁸ Localities need financial assistance to address urban heat islands and tree canopy inequities.

America's forests sequester 866 million tons of carbon a year, which is roughly 16% of the US annual emissions.

Localities, many of which have adopted tree canopy goals of 40% or higher, currently don't have the authority to offset tree loss. Legislation intended to grant additional authority to local governments to offset the loss of tree canopy with tree funds and tree banks must be reenacted during the 2023 General Assembly session.

SOLUTION

Fewer trees would be lost during construction activities if DEQ would establish an existing tree canopy that is not deemed forest/open space as a fourth land-use category. Many smaller sites could gain the nutrient reduction credits required if tree planting is adopted as an approved stormwater best management practice (BMP). As a result, developers have no incentive to preserve trees on site and sometimes must remove trees to make room for an approved stormwater BMP. In 2022, a Virginia Department of Environmental Quality (DEQ) stakeholder group reviewed the issue and concluded that they should "continue to study the preservation/conservation of existing tree canopy that is not already deemed forest/open space as a fourth land-cover category" and develop a stormwater credit for new tree plantings.

To replace the loss of trees to road expansion, Virginia Department of Transportation (VDOT)

should provide tree planting grants to adjacent localities impacted and/or expand plantings in the VDOT right-of-way. VDOT should include acres of canopy lost to road expansion and mitigation measures in its annual MS4 report.

To offset canopy loss while working towards the goal of no net canopy loss in rural and urban areas, legislators must invest in Department of Forestry (VDOF) Urban and Community Forestry grants and the Trees for Clean Water grants. The Urban and Community Forestry grants help localities address urban heat island effects, conduct tree canopy assessments, and update urban forestry master plans. The Trees for Clean Water grants help localities, faith institutions, civic organizations, and NGOs replace lost canopy by funding tree giveaways, tree planting events, maintenance, and homeowner education.

POLICY RECOMMENDATIONS

Reenact SB537, which would provide additional authority to localities to replace lost canopy.

\$4 million per year for Virginia Department of Forestry Trees for Clean Water and \$3 million per year for Urban and Community Forestry grants, with 25% of funds prioritized for low-income communities.

Accelerate DEQ's efforts to establish a 4th land cover type and stormwater best management practices for tree planting to enable developers to preserve trees onsite and receive stormwater credits for trees beyond the minimum required by state code.

Direct VDOT to offset tree canopy losses due to road expansion projects by providing tree planting grants to communities adjacent to construction activities, and to replace lost tree canopy in the VDOT right-of-way.

Mother and daughter plant trees
Photo by Hugh Kenny



INVESTING IN WILDLIFE CROSSINGS & HABITAT CONNECTIVITY

VIRGINIA'S FLORA & FAUNA

Courtney Hayes // Wild Virginia // courtney@wildvirginia.org
Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Zachary Sheldon // The Nature Conservancy // Zachary.Sheldon@tnc.org
Erin Sito // Wildlands Network // e.sito@wildlandsnetwork.org

EXECUTIVE SUMMARY

Wildlife corridors and habitat connectivity are crucial for ensuring ecosystem health. Wildlife must be able to move to find food and water resources, genetically diverse mates, and climate refugia.¹² Wildlife crossings improve connectivity and reduce dangerous and costly wildlife-vehicle collisions. Virginia took steps forward in 2020³ and 2021,⁴ passing bills to study and prioritize wildlife corridors. Now, we must invest in the areas identified in the forthcoming Virginia Wildlife Corridor Action Plan by creating a state funding mechanism that leverages the new and available federal dollars unlocked by the Infrastructure Investment and Jobs Act.

CHALLENGE

Over 70,105 miles of roads carve Virginia's land into pieces, impeding wildlife movement.⁵ Roads create barriers to safe passage for terrestrial and aquatic species, and Virginia's are at "high-risk" for wildlife-vehicle collisions. According to State Farm collision data, it is the 15th most dangerous state in the nation, with a 1-in-75 chance of hitting an animal on Virginia's roadways.⁶ More than 90% of deer collisions result in vehicle damage costing roughly \$1,840 per collision.⁷ Nationally, the associated costs of vehicle repair, medical treatment, towing, law enforcement, monetary value of the animals, and carcass removal amount to \$8.4 billion per year.⁸ That figure does not consider the cost of biodiversity loss.

Virginia is the 15th most dangerous state in the nation for wildlife-vehicle collisions, with a 1-in-75 chance of hitting an animal on Virginia roads.

Aquatic organisms suffer from roads too. Undersized culverts can block aquatic species movement, damage roadways, erode streambanks, and restrict spawning migrations and movement of culturally significant species

like brook trout, shad, and river herring.⁹ Two Virginia road stream crossings assessments found that 54% of crossings in Blue Ridge headwater streams¹⁰ and 58% of crossings in the coastal plain impeded fish movement.¹¹ Increasing culvert size and improving design can create safe passage corridors for aquatic, terrestrial, game and nongame species.

Virginia has already made great strides to identify "hot spots" for collisions on its roadways, but it has yet to fully invest in wildlife crossings, directional fencing, landscape protections, and agency staffing to implement these measures.

SOLUTION

Wildlife crossings can decrease wildlife-vehicle collisions by 92% when properly sited and with exclusionary fencing.¹² Reduced collisions means reduced costs. In many cases, crossings end up paying for themselves over time by simply reducing the number of costly wildlife-vehicle collisions. In just 1.8 years, the benefits of culverts with exclusionary fencing along Virginia's I-64 exceeded the costs of fencing, with an average savings of \$2.3 million per site.¹³

Investing in wildlife-friendly infrastructure in Virginia is fiscally responsible and timely. Billions of federal dollars were made available for wildlife infrastructure with the passage of the Infrastructure Investment and Jobs Act. Many of these infrastructure programs require applicants to contribute matching funds to unlock the federal funds available, and because some of these programs are temporary, Virginia must seize these opportunities while they are available by committing to legislation that will help fund implementation of wildlife crossings and habitat connectivity projects.

Additionally, with climate change expected to increase the frequency and intensity of flooding,¹⁴ Virginia has an opportunity to reassess and

update its roadways and culvert maintenance to improve aquatic connectivity and build climate-resilient infrastructure. Addressing both issues at once will result in saved costs and an extended infrastructure lifespan.

The General Assembly passed excellent bills that began the work of protecting wildlife movement, but funding is still needed to support the agencies, partners, and private landowners who must all work together to truly protect and restore wildlife corridors and create safe passage for our terrestrial and aquatic species.

Black bear (*Ursus americanus*) and her cubs attempt to safely cross a roadway

Photo provided by Wildlands Network



POLICY RECOMMENDATIONS

Ensure a state funding mechanism and a \$5 million budget allocation in 2023 to, in part, support crossing implementation in areas identified by Virginia's Wildlife Corridor Action Plan, as well as to leverage federal dollars available for wildlife crossings and habitat connectivity projects.

Provide additional staffing capacity and support for the state agencies charged with developing and advancing the Wildlife Corridor Action Plan by funding and hiring at least 1 FTE in 2023.

Direct VDOT to determine the Aquatic Organism Passage (AOP) status of a road-stream crossing prior to replacement/repair projects and update design standards to ensure habitat connectivity and resiliency for all road stream-crossing projects.

EXPEDITING THE OYSTER'S RECOVERY

VIRGINIA'S FLORA & FAUNA

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Chris Moore // Chesapeake Bay Foundation // cmoore@cbf.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org

EXECUTIVE SUMMARY

The native oyster (*Crassostrea virginica*) is one of the Chesapeake Bay's keystone species and of great ecological, economical, and historical importance in the Commonwealth. Fortunately, during the 2019 legislative session, the General Assembly authorized an increased investment in efforts to improve the pace of ecological and fishery restoration efforts. These efforts support maintenance of the state's commercial fishery and the wide array of ecosystem services provided by healthy oyster habitats. With additional enhancement activities taking place and growth in the wild population of oysters throughout the state, now is the time to further investigate the success of these efforts and plan for the successful management of this resource in the future.

CHALLENGE

The Chesapeake (meaning "great shellfish bay" in Algonquin) Bay once boasted oyster reefs so expansive they posed navigation hazards to explorers and watermen. Today, oyster populations in the Chesapeake Bay and its tributaries remain a fraction of their historical numbers. Overfishing, disease, and pollution have all taken their toll on this keystone species. There was a time when the oyster population in the Bay was so vast, the entire 19 trillion gallons of water could be filtered in less than a week. Today, our current population takes a whole year to filter the Bay.

The oyster population used to filter the entire 19 trillion gallons of water in the Bay in less than a week. The current population takes a whole year to filter the Bay.

As oyster restoration efforts increase to meet WIP III goals, the available supply of shell has dwindled while the cost per bushel has increased. This has created logistical problems in finding enough shells to complete projects.

Finally, the Code of Virginia still contains an outdated section related to the possible introduction of the non-native *Crassostrea ariakensis* that is no longer necessary due to the restoration success of the native oyster.

SOLUTION

Restoring Virginia's oyster population will require broad partnerships, wise management of the existing oyster resource, and adequate resources. Fortunately, targeted successful restoration efforts are being implemented by a host of federal, state, and nongovernmental organizations to increase the oyster population and meet the oyster goal for the Chesapeake Bay Watershed Agreement.¹ At the same time, the Virginia Marine Resources Commission (VMRC) has strived to implement a fishery management plan that ensures the overall health of the oyster population while allowing for the culturally significant fishery to remain active.

To meet the growing demand for oyster shells, oyster shell recycling programs need to be ramped up and the process to use alternative substrates (such as stone) for reef restoration expedited.

POLICY RECOMMENDATIONS

Direct the Virginia Marine Resources Commission and the Virginia Institute of Marine Science to comprehensively map and sample all oyster growing areas in the state.

Maximize the reuse of the state's oyster shell resource by creating economic incentives for shell recycling and reducing the disposal of oyster shells in landfills.

Expedited permitting for alternative substrates for use in oyster restoration projects.

Update state code in order to remove references to the possible introduction of the non-native *Ariakensis* oyster.



After the Roast

Photo by Victoria Kennedy

PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS

VIRGINIA'S FLORA & FAUNA

Erin Reilly // James River Association // ereilly@thejamesriver.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org
Joe Wood // Chesapeake Bay Foundation // jwood@cbf.org

EXECUTIVE SUMMARY

Freshwater mussels are an important part of Virginia's natural heritage and benefit streams and rivers by filtering water and removing pollutants such as nitrogen. These valuable organisms have shown rapid decline, and investments and strategies are needed to protect and restore these populations.

CHALLENGE

Freshwater mussels represent a great source of biodiversity, natural heritage, and ecological services. A single mussel can filter up to 15 gallons of water per day,¹ which in turn can prevent pollutants such as nitrogen from reaching downstream waters.² Unfortunately, mussels represent the most endangered class of organisms with 70% of species vulnerable to extinction.³ Virginia has 80 species, many of which have incurred significant population losses. Since the Endangered Species Act's adoption in 1973, the largest single loss of endangered species

occurred in the Clinch River in 1998 due to a toxic chemical spill.⁴ Water quality, dams, and loss of habitat have degraded these resources and threats will be further exacerbated with climate change.

Mussels represent the most endangered class of organisms with 70% of species vulnerable to extinction.

Freshwater mussels have elaborate reproductive cycles which are linked with fish populations, often associated with specific species. As such, restoration of mussels is complicated and challenging, as it requires consideration of both mussels and fish populations. Further, the diversity of mussels combined with a lack of robust historical surveys presents challenges to identifying restoration sites.⁵ Investments to protect mussels have largely been limited to mitigation dollars but restoring these beneficial organisms will require greater investments.

James Spiny mussel restoration project on the James River

Photo by Meghan Marchetti, DWR



SOLUTION

Fortunately, our ability to propagate and restore populations of mussels has significantly advanced. Hatcheries have vastly improved their ability to propagate mussels by using fish hosts in recent decades and are very capable of restoring populations given available funding mechanisms. Still, very limited resources have been appropriated and these funds have primarily come from mitigation events. Mitigation is only aimed at returning what was lost, not necessarily to restore species and rivers that require intervention to prevent extirpation or decline. Virginia has partnered with businesses and public organizations in Southwest Virginia to augment and monitor mussel populations in the Tennessee drainage of Virginia. This effort has seen progress towards creating self-sustaining populations of endangered mussels. Given this success, Virginia is embarking on a similar statewide process.

To meet the needs that will be identified in the statewide plan, Virginia needs to invest in restoration programs that support hatcheries in restoration efforts and in efforts to grow and release mussels across the Commonwealth. Virginia has recognized the benefits of shellfish in previous conservation efforts, and freshwater mussel restoration offers an opportunity to extend those successful initiatives into the headwaters of the state. Virginia has a willing coalition of partners that can help with mussel restoration, but the Commonwealth needs a comprehensive restoration plan.

POLICY RECOMMENDATIONS

\$5 million initial investment for needed renovations and expansions at the Aquatic Wildlife Conservation Center at the Buller Fish Hatchery in Southwest Virginia to meet mussel production needs and synergize with the new Clinch River State Park.

\$2 million to increase mussel restoration projects at hatcheries.



Eastern Elliptio (*Elliptio complanata*)
Photo by Erin Reilly

BUILDING SUSTAINABLE FISHERIES

VIRGINIA'S FLORA & FAUNA

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org
Chris Moore // Chesapeake Bay Foundation // cmoore@cbf.org
Erin Reilly // James River Association // ereilly@thejamesriver.org

EXECUTIVE SUMMARY

Our estuarine fisheries are important both culturally and economically to the Commonwealth. The blue crab (*Callinectes sapidus*) fishery has seen significant reductions in harvests in recent years. Even at a reduced level of approximately 18 million pounds, the dockside value of the blue crab fishery alone was approximately \$35 million.¹ Stakeholders and fishery managers have identified specific challenges that are currently reducing the capacity of this fishery to provide a multitude of benefits to the state. Targeted investments and policies pertaining to this fishery

resource can help ensure the sustainability of this fishery from both an ecological and economic perspective.

CHALLENGE

Data from this year's estimate of blue crab abundance indicate a concerning downward trend in segments of the population.² In addition, the total number of crabs estimated in the population was the lowest on record.³ An ongoing concern in the blue crab fishery has been the excess amount of crabbing gear being utilized to catch blue crabs. In order to help reduce this

Electro fishing
Photo by Hugh Kenny



problem, a crab pot tagging program should be implemented in order to help ensure a more appropriate amount of gear is deployed by the fishery and aid the Virginia Marine Resources Commission (VMRC) in management of the fishery.

The total number of crabs estimated in the population is the lowest on record.

Water withdrawal intakes kill billions of fish, shellfish, eggs, and larvae each year through impingement (organisms being pinned against mesh screens because of strong withdrawal velocity) or entrainment (organisms that go through a facility's water system because mesh size is too large). At Surry Power Station, for example, as many as 7.4 billion finfish and 49.1 billion shellfish are entrained annually.⁴ Across Virginia, energy production facilities that withdraw more than 2 MGD for cooling water purposes are required to meet new standards for velocity and mesh size under section 316(b) of the Clean Water Act to reduce impingement and entrainment.⁵ But Virginia has not yet enforced these fish protection requirements, leaving the facilities to operate under permits with outdated and lethal velocity and mesh size standards.

SOLUTION

The General Assembly should appropriate the necessary funds to implement a pilot crab pot

tagging program for three years. This will allow VMRC to gauge the effectiveness of such a program in protecting the blue crab resource, easing enforceability of management measures for the fishery, and the feasibility of adopting such a program on a long-term basis.

To protect Virginia's fisheries from unnecessary impingement and entrainment, the Department of Environmental Quality should work with power plants facilities to update their cooling water intakes to meet the new standards required by § 316(b) of the Clean Water Act.⁶

Blue crab
Photo by Jenn Clarke



POLICY RECOMMENDATIONS

Fund a 3-year pilot program from the general fund for crab pot tagging to help ensure the improvement of the blue crab resource and assist VMRC with management of the fishery.

Allocate funds necessary to complete a comprehensive blue crab stock assessment in partnership with other Chesapeake Bay region management bodies and blue crab scientists.

Direct DEQ to promptly enforce federal regulations implementing § 316(b) of the Clean Water Act for cooling water intakes at power plants to reduce impacts on fish populations.

LAND USE & TRANSPORTATION

Transportation represents the largest source of carbon pollution in Virginia. Whether the issue is air pollution, polluted water runoff, or the loss of natural landscapes to development, the ways in which we build and connect our communities are often part of the problem. In order to save our lungs and the planet, we need a rapid shift to a cleaner, more accessible, and more equitable transportation system. In addition to making smarter land use decisions to support the transition to zero-carbon transportation, we must expand our underfunded public transit systems, increase Virginia's rail capacity, and invest in transit-oriented communities.

LAND USE & TRANSPORTATION REFORM SUMMARIES & CONTACTS	55
TRANSFORMING TRANSPORTATION.....	57
BOOSTING SMART GROWTH.....	59
REDUCING VEHICLE POLLUTION.....	61
ACCELERATING TRANSPORTATION ELECTRIFICATION.....	63
WALKING, BIKING, & PUBLIC TRANSIT SUMMARIES & CONTACTS	65
INCREASING WALKING & BIKING.....	67
IMPROVING PUBLIC TRANSIT.....	69
EXPANDING RAIL.....	71

EXECUTIVE SUMMARIES & CONTACT INFORMATION

TRANSFORMING TRANSPORTATION

Virginia needs a cleaner, more equitable transportation system that offers more options to get people where they need to go. For decades, funds have primarily gone to new road projects—to the detriment of safer, healthier, and greener choices. As a result, transportation is Virginia’s largest source of carbon pollution, many roads and bridges require repair, and there are limited alternatives to driving—especially in under-resourced communities. Despite some recent progress, transportation planning and funding continue to focus heavily on highway expansion and construction. We must defend recent progress and continue to transform our transportation approach to favor cleaner, healthier mobility options that reduce traffic, strengthen our communities, and protect our environment.

Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org
Trip Pollard // Southern Environmental Law Center // tpollard@selcva.org

BOOSTING SMART GROWTH

Where and how we build our communities is critical to maintaining our quality of life, boosting equity, and protecting the environment. Smart growth promotes development in and near our cities; towns; and walkable, mixed-use, transit-accessible communities. This includes housing close to jobs, retail, and services, with streets designed for safe walking and biking with frequent, reliable transit. By doing so, we reduce driving and pollution, improve health,¹ protect natural and historic resources from sprawl, and expand opportunities for those who cannot afford a car, unable to drive or choose not to drive. State policies too often fuel car-centric development, but reforms to promote smart growth will bring environmental, health, and economic benefits to all Virginians.

Karen Campblin // VSC NAACP; Sierra Club - Virginia Chapter // karen@kctcplan.com
Stewart Schwartz // Coalition for Smarter Growth // stewart@smartergrowth.net

REDUCING VEHICLE POLLUTION FOR PUBLIC HEALTH

The transportation sector in Virginia is a significant source of air pollutants including particulate matter, methane, nitrous oxide, and hydrofluorocarbons, which are all linked not only to climate change, but also to decreased air quality, worse public health outcomes, and environmental damage. Long-term personal health effects can include cancers, cognitive decline, upper respiratory diseases, asthma, heart disease, and obesity. Effectively reducing unsafe levels of air pollution will require the Commonwealth to use a variety of tools, including strong emission standards to incentivize cleaner vehicles, a robust statewide real-time air monitoring system to measure progress, and proper incentives and funding opportunities to mitigate the impact of pollution in Virginia, particularly in our most vulnerable and overburdened communities.

Karen Campblin // VSC NAACP; Sierra Club - Virginia Chapter // karen@kctcplan.com
Bob Kitchen // Virginia Clinicians for Climate Action // bobkitchen1@gmail.com

ACCELERATING TRANSPORTATION ELECTRIFICATION

The transportation sector is Virginia’s largest source of carbon pollution. Adopting the Advanced Clean Car Standards in 2021 was an important step towards reducing these emissions, but a robust defense of that progress - including additional, complementary policies - is needed to ensure its long-term implementation. Rapidly transitioning to electric-powered cars, trucks, trains, and buses will result in numerous public health, economic, and climate benefits. State-level policies, combined with a once-in-a-generation influx of federal funds for transportation reform, can bring these benefits to the Commonwealth and accelerate the arrival of a cleaner, more prosperous mobility future for all Virginians.

Dakoury Godo-Solo // Electrification Coalition // dgodoso@electrificationcoalition.org
Lena Lewis // The Nature Conservancy // lena.lewis@tnc.org
Blair St. Ledger-Olson // Climate Cabinet Education // blair@climatecabinet.org

Fitness on Mount Trashmore |
Photo by Louise Devenney



LAND USE & TRANSPORTATION REFORM

VGN POINT OF CONTACT

Wyatt Gordon // wyatt@vcnva.org
Policy & Campaigns Manager - Land Use & Transportation

TRANSFORMING TRANSPORTATION

LAND USE & TRANSPORTATION REFORM

Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org
Trip Pollard // Southern Environmental Law Center // tpollard@selcva.org

EXECUTIVE SUMMARY

Virginia needs a cleaner, more equitable transportation system that offers more options to get people where they need to go. For decades, funds have primarily gone to new road projects—to the detriment of safer, healthier, and greener choices. As a result, transportation is Virginia's largest source of carbon pollution, many roads and bridges require repair, and there are limited alternatives to driving—especially in under-resourced communities. Despite some recent progress, transportation planning and funding continue to focus heavily on highway expansion and construction. We must defend recent progress and continue to transform our transportation approach to favor cleaner, healthier mobility options that reduce traffic, strengthen our communities, and protect our environment.

CHALLENGE

Significant transportation reforms have been adopted in recent years, including increases in funding for transit, rail, and highway maintenance, the groundbreaking Transforming Rail in Virginia initiative, and the development of SMART SCALE to provide a more objective and transparent basis for selecting projects for funding. Yet too much of our transportation funding continues to be spent on wasteful and damaging highway projects. Even accounting for recent transit and rail funding increases, over 75% of the final FY2023-28 Six-Year Improvement Program is allocated to highways.¹ And efforts to weaken or sidestep SMART SCALE persist, including using the budget process to funnel even more money to highway projects. Decades of studies and experience have proven that new and wider highways incentivize sprawling development and encourage more driving, and thus fail to provide long-term congestion relief.² This asphalt-centered approach has profound effects on our communities and environment.

Transportation generates over half of all statewide carbon pollution.

Transportation generates over half of all statewide carbon pollution,³ and communities of color

and under-resourced communities bear a disproportionate share of the health burdens from transportation-related pollution.⁴

Moreover, new and expanded roads destroy natural resources—such as forests and wetlands—that absorb carbon and increase communities' resilience to sea level rise and flooding. They also add to the maintenance costs taxpayers must cover. And they often do little to nothing to improve mobility and access for the hundreds of thousands of Virginians who do not own a personal vehicle.

SOLUTION

Meeting the climate crisis; spending tax dollars more wisely; and improving the health, equity, and mobility of Virginians requires moving away from a transportation paradigm focused on ever-increasing asphalt. It requires focusing funding on existing infrastructure through a “fix it first” approach and shifting substantial amounts of our state and regional transportation budgets from highway construction to mass transit, rail, bicycle, and pedestrian facilities. This shift is essential for the Commonwealth to remain economically competitive. Transit and other alternatives to driving can provide critical access to jobs, healthcare, and essential services — all while reducing Virginians' dependence on expensive fossil fuels. Furthermore, today's businesses increasingly seek to locate in walkable communities with good access to public transportation.

As federal funding makes its way into Virginia under the new federal infrastructure law, we need to seize the moment to pursue those competitive grants available for cleaner, more equitable transportation. SMART SCALE must be defended, but we also need to strengthen consideration of the climate change effects of transportation plans, proposals, and funding decisions and ensure that state and regional plans serve to reduce—rather than exacerbate—emissions of greenhouse gasses and other pollutants. Lastly, the Commonwealth should set a specific goal for reducing vehicle miles traveled and step up efforts to accelerate the electrification of vehicles and expand charging infrastructure for the driving we continue to do.

POLICY RECOMMENDATIONS

Establish a long-term goal to increase the share of clean transportation funding to 50% by 2030 to expand mobility options for Virginia residents and reduce pollution, including taking advantage of funding flexibility and seeking competitive grants under the new federal infrastructure law.

Strengthen the “fix it first” requirements in the Virginia Code and allocate funding to ensure that road funding first covers maintaining and repairing existing infrastructure.

Defend SMART SCALE and oppose efforts to fund specific projects outside of its prioritization process.

Prioritize carbon pollution reduction in transportation planning and funding by strengthening the review of major projects' climate change effects, requiring state and regional plans to cut carbon emissions and vehicle miles traveled, and developing a plan to take advantage of carbon reduction funding under the new federal infrastructure law.

Set a specific goal for VDOT and DRPT to reduce statewide vehicle miles traveled by 20% by 2050.

Virginia Capital Trail
Photo by Andre Eanes



BOOSTING SMART GROWTH

LAND USE & TRANSPORTATION REFORM

Karen Campblin // VSC NAACP; Sierra Club - Virginia Chapter // karen@kctcplan.com
Stewart Schwartz // Coalition for Smarter Growth // stewart@smartergrowth.net

EXECUTIVE SUMMARY

Where and how we build our communities is critical to maintaining our quality of life, boosting equity, and protecting the environment. Smart growth promotes development in and near our cities; towns; and walkable, mixed-use, transit-accessible communities. This includes housing close to jobs, retail, and services, with streets designed for safe walking and biking with frequent, reliable transit. By doing so, we reduce driving and pollution, improve health,¹ protect natural and historic resources from sprawl, and expand opportunities for those who cannot afford a car, unable to drive or choose not to drive. State policies too often fuel car-centric development, but reforms to promote smart growth will bring environmental, health, and economic benefits to all Virginians.

CHALLENGE

The past 80 years of sprawling development have proven costly - generating longer commutes; record levels of carbon pollution; socio-economic segregation; and the irrevocable loss of historic, natural, and scenic resources. By underfunding transit while subsidizing the development of car-dependent communities, Virginia's land use and transportation policies have forced families to live ever farther from jobs, schools, and other essential destinations. It has contributed to racial and economic segregation by moving jobs farther from people of color, people with disabilities, low-wealth and other vulnerable populations while prioritizing single family homes with prices out of reach for most people.²

Long, expensive commutes reduce productivity and drain household budgets.

Long, expensive commutes reduce productivity, drain household budgets, and disproportionately impact people with disabilities, impacting the ability to invest in better housing, children's education, and other daily needs. A 2019 study by AAA estimated the cost of annual car ownership

at over \$9,000. With the average Virginia family owning a minimum of two cars and accruing between \$18,230-\$36,460 per year in related expenses per AAA (before the 2022 gas price spike),³ this means far less income to put towards food on the table, a small business, or one's education. For people that cannot afford a car, do not drive, or choose greener transportation, essential services and job opportunities are increasingly out of reach. Sprawling, car-centric development costs localities and the state far more in terms of infrastructure and destroys countless acres of farms, forest, and cultural, historic, and scenic resources.⁴ With the boom in massive distribution and data centers, the loss of farmland and forests is only accelerating.

SOLUTION

Smart growth represents the Commonwealth's best opportunity to reduce vehicle miles traveled, lower state and local infrastructure costs, and build a prosperous future in which people of all incomes have a fair chance to get ahead. Compact, walkable, mixed-use, transit-oriented communities with a mix of housing options reduce the amount we have to drive, reduce air and carbon pollution, and save families money via lower combined housing and transportation costs. Infill development in our existing cities, towns, and inner suburbs allows us to use and modernize existing infrastructure and convert parking lots to livable communities. We need the state to prioritize these places for infrastructure investment and update tax incentives and policies for distribution and data centers to favor brownfields and redevelopment sites, including transit-accessible sites, rather than greenfields.

Diversifying the type and size of our housing stock will provide more affordable options for our modern households. It offers a step on the ladder of home ownership. Allowing for missing middle housing (accessory dwelling units, duplexes, triplexes, fourplexes and multifamily) near existing public facilities, removing legal and zoning codes that result in racial exclusion and

segregation, and expanding inclusionary zoning will expand opportunities for all Virginians.

Matching these measures with state and local funding for affordable housing close to jobs and transit will reduce driving, provide security and

stability for families and children, reduce stress, and improve health. Investments in affordable housing in accessible locations will provide far greater transportation and quality of life benefits than never-ending spending on road expansion to support ever-longer commutes.



POLICY RECOMMENDATIONS

Adopt fix-it-first requirements in Virginia Code. Calculate replacement needs for existing and aging roads, bridges, water, sewer, schools, and other public buildings, and budget to fully fund replacement of all facilities in poor condition before subsidizing greenfield development, eliminating poor conditions within 10 years.

\$200 million per year for the state affordable housing trust fund within three years and prioritize infill projects close to jobs and high-quality public transit.

Increase housing options by permitting multi-family housing by-right (duplexes, triplexes, fourplexes, etc.), in single-family zones which have close access to jobs, services, and frequent transit, lowering minimum lot sizes, and adopting incentives like reduced parking requirements.

Remove any discriminatory or Jim Crow era laws that are still listed in VA Codes relating to planning, land use, zoning, and subdivision covenants.

Require megasite incentive programs and siting to include review of the scale, location, impact of new and proposed distribution and data centers on our transportation networks, electric grid, farmland, forests, water, and historic and cultural resources, creating a scoring system like SmartScale and a preference for brownfield and redevelopment sites.

REDUCING VEHICLE POLLUTION FOR PUBLIC HEALTH

LAND USE & TRANSPORTATION REFORM

Karen Campblin // VSC NAACP; Sierra Club - Virginia Chapter // karen@ktcplan.com
Bob Kitchen // Virginia Clinicians for Climate Action // bobkitchen1@gmail.com

EXECUTIVE SUMMARY

The transportation sector in Virginia is a significant source of air pollutants including particulate matter, methane, nitrous oxide, and hydrofluorocarbons, which are all linked not only to climate change, but also to decreased air quality, worse public health outcomes, and environmental damage. Long-term personal health effects can include cancers, cognitive decline, upper respiratory diseases, asthma, heart disease, and obesity.

Effectively reducing unsafe levels of air pollution will require the Commonwealth to use a variety of tools, including strong emission standards to incentivize cleaner vehicles, a robust statewide real-time air monitoring system to measure progress, and proper incentives and funding opportunities to mitigate the impact of pollution in Virginia, particularly in our most vulnerable and overburdened communities.

CHALLENGE

Reducing vehicle pollution requires understanding how transportation impacts not only access and mobility but also social structures, public health, the environment, and economic factors. Another fundamental challenge is that the people who suffer the worst from its pollution tend to contribute the least. Communities of color bear a disproportionate burden from air pollution building from decades of environmental racism, discriminatory practices such as redlining, and land use decisions that allowed for the creation of overburdened neighborhoods, cancer alleys, and sacrifice zones.

Fine particulate matter, a major component of transportation, generates air pollution and can injure a person's respiratory and cardiovascular systems. This increases the risk of developing many medical problems including disproportionate hospitalization and death from COVID-19, and higher risks of cancers and upper

respiratory illnesses such as asthma, as well as suffering heart attacks.^{1,2}

Annually, particulate matter from Virginia specific transportation has been found to cause 92 excess deaths, 2,600 cases of exacerbated asthma, 10,000 lost workdays, and lead to additional health costs of \$750 million.³ When considering transportation emissions in their entirety, these emissions led to 750 premature deaths in Virginia in 2016, and the deaths associated with this pollution are 61% higher in low income, older, and BIPOC elderly, and minority communities.^{4,5}

Annually, particulate matter from Virginia specific transportation leads to 92 excess deaths and \$750 million in health costs.

Agriculture, a multi-billion dollar industry in Virginia, is heavily influenced by the environment. Air pollution contributes to failing agricultural and commercial crop yields, raises plant susceptibility to disease pests and other environmental stressors, and can directly contaminate ground and surface bodies of water and soil. Furthermore, contaminants such as sulfur dioxide and nitrogen oxide particles can create toxic rain when they mix with water and oxygen in the air, as well as absorbed directly by water bodies further worsening environmental problems, such as biodiversity reduction, habitat degradation, and impacts to Virginia's aquaculture industry.

SOLUTION

Strict requirements to reduce tailpipe emissions, effective clean car standards and personal choices to reduce vehicle miles driven can help reduce vehicle emissions significantly. The less fossil fuel we burn, the faster we can reduce vehicle pollution. Other complementary strategies concern land-use, forestry, and the built environment.

How communities are developed will impact how convenient and/or appealing alternative transportation modes will be for commuters.

Strategies to reduce vehicle pollution include:

- Limiting carbon emissions from tailpipes and lessen limits annually. All carbon management programs must engage and be responsive to the needs of impacted communities throughout the policy design and implementation process and must hold polluters accountable for the true cost of pollution. Impacted communities must be prioritized as recipients of generated revenues.
- Reallocating funding away from carbon-intensive highways, and boosting new funding to swiftly transition to zero emission, i.e. public transportation.
- Continuing to support efforts to implement equitable emission standards, such as the Virginia Advanced Clean Car Standards.
- Continuing to support and fund previously passed electric school bus bill programs.⁶

- Planting native trees and vegetation, including near-road plantings that would provide noise and vegetation barriers, which have been shown to remove small particulate pollutants and reduce downwind pollution at a greater rate than vegetation or solid noise barrier alone.⁷ Additionally, expanding tree canopies in vulnerable areas can lead to decreased levels of pollutants due to their absorption through structures in the leaves surfaces.⁸ Studies have shown that trees can reduce street level particulate matter by 60%.⁹
- Investing in a robust statewide air quality monitoring system consisting of stationary monitors and scheduled mobile monitoring throughout the Commonwealth and in heavily polluted communities.

POLICY RECOMMENDATIONS

Commission a study by the Joint Legislative Audit and Review Commission to determine the capability of the current air quality monitoring to present recommendations to address the need for additional monitors, identify specific impacted locations with a consideration to Environmental Justice, and how best to fast track implementation.

Support policy recommendations listed in the ACCELERATING TRANSPORTATION ELECTRIFICATION policy paper, page 63, including protecting and advancing Virginia's Clean Car Standards, which take effect in 2024 and funding for the Virginia Electric Vehicle Grant Fund to support school districts in obtaining electric buses.

Support policy recommendations listed in INCREASING INVESTMENT IN TREES, page 43, particularly to ensure the proper funding is allocated to the Department of Forestry's Urban and Community Forestry Grant Program.

Reduced vehicle pollution will improve air quality and night sky preservation

Photo by Harry Liu

ACCELERATING TRANSPORTATION ELECTRIFICATION

LAND USE & TRANSPORTATION REFORM

Dakoury Godo-Solo // Electrification Coalition // dgodosolo@electrificationcoalition.org
Lena Lewis // The Nature Conservancy // lena.lewis@tnc.org
Blair St. Ledger-Olson // Climate Cabinet Education // blair@climatecabinet.org

EXECUTIVE SUMMARY

The transportation sector is Virginia's largest source of carbon pollution. Adopting the Advanced Clean Car Standards in 2021 was an important step towards reducing these emissions, but a robust defense of that progress - including additional, complementary policies - is needed to ensure its long-term implementation. Rapidly transitioning to electric-powered cars, trucks, trains, and buses will result in numerous public health, economic, and climate benefits. State-level policies, combined with a once-in-a-generation influx of federal funds for transportation reform, can bring these benefits to the Commonwealth and accelerate the arrival of a cleaner, more prosperous mobility future for all Virginians.

CHALLENGE

The transportation sector accounts for 53% of Virginia's carbon dioxide emissions, and is a major source of other air pollutants - leading to negative climate, public health, and economic impacts.¹ These emissions disproportionately affect low-income populations and communities of color who breathe 66% more vehicular air pollution than white residents on average.² Vehicular particulate matter (PM_{2.5}) alone accounts for 92 deaths, 2,600 cases of exacerbated asthma, and 10,000 lost workdays in Virginia each year.³ When considering transportation emissions in their entirety, these emissions led to 750 premature deaths in Virginia in 2016, and the deaths associated with this pollution are 61% higher in low-income and older communities, along with communities of color.^{4,5}

Vehicle emissions led to 750 premature deaths in Virginia in 2016, and the deaths associated with this pollution are 61% higher in low-income and older communities, along with communities of color.

To comprehensively address vehicle pollution, cleaner transportation alternatives such as transit and rail need to be expanded, and thoughtful land use incentivized and pursued, in order to reduce vehicle miles traveled (see IMPROVING PUBLIC TRANSIT, page 69 and INCREASING BIKING & WALKING, page 67), and we must simultaneously accelerate transportation electrification to eliminate emissions from the remaining trips.

While electric cars and buses are far cheaper to own in the long run, higher upfront costs keep these savings out of reach for many Virginians.^{6,7,8} In addition, many households lack access to reliable charging infrastructure. Roughly 40% of U.S. households don't park within 20 feet of an electrical outlet, making access to public EV charging essential for widespread adoption.⁹ Bridging these affordability and accessibility gaps is critical to ensuring a successful and equitable transition to electric mobility.

SOLUTION

Every electric vehicle (EV) that replaces a gas-powered model helps clean Virginia's air, supports the Commonwealth's climate goals, and drives local economic development. Virginia's growing advanced vehicle sector already supports 5,500 jobs.¹⁰ When powered by Virginia's current electricity mix, EVs produce up to 70% fewer emissions than internal combustion engine (ICE) vehicles.¹¹ And as Virginia's grid gets cleaner and cleaner, the EVs on its roads will too. The more Virginia electrifies transportation, the more the entire Commonwealth benefits.

The General Assembly has taken important strides towards bringing EVs to Virginia, but these significant wins are not impervious to weakening or repeal. The legislature must defend against attempts to roll back progress towards a cleaner transportation future, while also providing thoughtfully designed financial incentives that make EVs, electric buses, and e-bikes more

affordable. These policy solutions accelerate adoption rates and put electric mobility within reach for more Virginians.¹²

Reliable access to charging infrastructure will also accelerate transportation electrification. The federal Infrastructure Investment and Jobs Act (IIJA) has allocated significant funding for states to build out their charging infrastructure along major travel corridors — including \$106 million in formula funding for Virginia and additional competitive grant opportunities.¹³ These funds must be spent in an equitable and efficient manner, and resources exist that can help Virginia map out and implement these infrastructure developments.^{14,15} From reduced emissions and decreased dependency on foreign oil, to better air quality and the creation of new, local jobs, transitioning to EVs is good for Virginia as a whole.

EV charging station in downtown Richmond

Photo provided by Drive Electric RVA



POLICY RECOMMENDATIONS

Protect and advance Virginia's Clean Car Standards, which take effect in 2024.

Allocate \$100 million annually until price parity is achieved for financial incentives to expand access to electrified mobility and help Virginians overcome the higher upfront cost of EVs, electric school and transit buses, and e-bikes.

Improve access to charging infrastructure by utilizing newly available IIJA funding allocations and competitive grants, while ensuring meaningful stakeholder input, especially from historically underserved communities.

Ensure that all efforts to accelerate transportation electrification prioritize under-resourced communities that experience higher levels of air pollution and respiratory illnesses.



EXECUTIVE SUMMARIES & CONTACT INFORMATION

INCREASING BIKING & WALKING

Transportation is Virginia's largest contributor to climate change. Virginia's traffic fatalities have grown dramatically in recent years to a 15-year high, including significant increases in bicyclist and pedestrian fatalities. Virginia needs a commitment to reducing transportation fatalities that focuses on vulnerable road users. This effort will require dedicated funding to build safer infrastructure for biking and walking, enacting policies and legal changes such as the Bicyclist Safety Stop and safer motorist overtaking, slower urban roadways, and expanding our active mobility networks for the 21st Century.

Kyle Lawrence // Shenandoah Valley Bicycle Coalition // kyle@svbcoalition.org
Jenn Million // New River Valley Bicycle Association // president@nrvbike.org
Brantley Tyndall // Virginia Bicycling Federation // president@vabike.org

IMPROVING PUBLIC TRANSIT

Safe, reliable public transportation is essential to ensuring that all Virginians have access to basic necessities like groceries, healthcare, schools, and jobs. As personal vehicles are responsible for the greatest share of Virginia's carbon emissions, high-quality public transit is also a key tool to meet the Commonwealth's climate goals. Yet public transportation is severely underfunded, leaving many Virginians with few or unsafe options for moving around their communities without a car. On top of its central importance to ensuring mobility for all, protecting public health, and meeting our climate goals, the dramatic inflation of gas and vehicle costs proves that providing access to fast, frequent public transit is critical to help keep households' costs down.

Rev. Dr. Faith B. Harris // Virginia Interfaith Power & Light // fharris@vaip.org
Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org
Faith Walker // RVA Rapid Transit // faith@rvarapidtransit.org

EXPANDING RAIL

Compelling energy, economic, and environmental benefits flow from maximizing the use of rail to move both people and goods. Virginia has made significant progress on passenger rail in recent years, but increased funding is needed to improve the speed, frequency, and reliability of service; extend service to new areas; modernize stations; and improve multimodal connections to them. Redirecting freight traffic from roads to rail is also important to reduce emissions and congestion, and steps needed include improving freight rail in the I-81 corridor and preserving abandoned rail corridors for future freight and passenger service. In addition, all passenger and freight trains and lines should be electrified, or other steps taken to eliminate emissions.

Danny Plaucher // Virginians for High Speed Rail // danny@vhsr.com
Trip Pollard // Southern Environmental Law Center // tpollard@selcva.org

WALKING, BIKING, RAIL, & PUBLIC TRANSIT

VGN POINT OF CONTACT

Wyatt Gordon // wyatt@vcnva.org
Policy & Campaigns Manager - Land Use & Transportation

INCREASING WALKING & BIKING

WALKING, BIKING, RAIL, & PUBLIC TRANSIT

Kyle Lawrence // Shenandoah Valley Bicycle Coalition // kyle@svbcoalition.org
Jenn Million // New River Valley Bicycle Association // president@nrvbike.org
Brantley Tyndall // Virginia Bicycling Federation // president@vabike.org

EXECUTIVE SUMMARY

Transportation is Virginia's largest contributor to climate change. Virginia's traffic fatalities have grown dramatically in recent years to a 15-year high, including significant increases in bicyclist and pedestrian fatalities. Virginia needs a commitment to reducing transportation fatalities that focuses on vulnerable road users. This effort will require dedicated funding to build safer infrastructure for biking and walking, enacting policies and legal changes such as the Bicyclist Safety Stop and safer motorist overtaking, slower urban roadways, and expanding our active mobility networks for the 21st Century.

CHALLENGE

Virginia will not achieve its climate goals until walking and biking are safer and more accessible. In 2021, 968 Virginians died on the commonwealth's roadways, a 17% increase from 2019. Pedestrian fatalities reached 125 and bicyclist fatalities doubled in the last year to 16, the highest tallies for both in more than a decade.

968 Virginians died on the Commonwealth's roadways in 2021, a 17% increase from 2019.

Forty-three percent of people report the desire to ride their bicycle more,¹ but many lack safe and accessible places to ride. Nearly 200,000 Virginia households have no access to a motor vehicle and need to bike and walk as a part of their primary commutes.² As traffic fatalities continue to climb, Black and brown pedestrians are up to twice as likely to be killed.³

These issues cannot be addressed without added infrastructure, funding to build it out, and both policies and facilities that allow for biking and walking as safe transportation to where people need to go.

Virginia's dedicated trail budget is a great start to building out safe walking and biking facilities

but falls short of making the transformative infrastructure changes to save lives and give people the freedom to walk and bike wherever they need to go. In order to stay safe and feel comfortable, people walking and riding bicycles need spaces that are physically separated from drivers. Furthermore, bicyclists need proven crash-reduction policies such as the freedom to yield at stop signs and to travel side by side in a lane. That last policy is especially important for parents who want to ride with their kids and shield them from traffic.

Virginia's vision for building active transportation infrastructure, its 2011 State Bike Plan, is outdated and needs to be updated to better connect and modernize the projects it is committing to build.

SOLUTION

Virginia needs a commitment to ending traffic fatalities across all agencies and policies. The safer our transportation network, the greater freedom we have to choose cleaner modes. It will take every level of government to achieve Vision Zero: a strategic action plan to lower traffic fatalities in Virginia to zero. Virginia's traffic fatalities have continued to climb across the state, and ensuring a significant and continued decrease in these tragic losses of life will take a coordinated commitment at the state level.

In looking toward reducing traffic fatalities in Virginia, it is worth noting that nothing is safer for people biking and walking than physical separation from drivers, and protected and separated trails lead to negligible crash fatalities despite high trail use. The Custis Trail in Rosslyn and Virginia Capital Trail between Richmond and Jamestown saw over 3.5 million⁴ and 1.2 million⁵ trail users in 2021 and 2020, respectively; this level of use can be expected in regions across Virginia. To add to our existing separated trail systems in the Commonwealth, we need increased dedicated funding for multi-use trails with a transportation focus. Localities need funding from all

government levels to build solutions to combat increased traffic fatalities.

Additionally, the Safety Stop, which allows bicyclists to yield at stop signs, was shown to contribute to a 23% reduction in bike crashes at intersections in a Delaware 5-year study. Two-abreast bicycling should be allowed whenever overtaking traffic is not delayed unreasonably. Allowing bicyclists and pedestrians more freedom to choose their safest course will go a long way toward ensuring safety for vulnerable road users.

Virginia's dated State Bike Plan and Complete Streets Policy should also be updated to incorporate inclusive trails, bike lanes, reconfigured roads, shoulders, and other safety and access measures. Planning connections of existing and future bikeways and walkways into useful networks is critical for transportation utility.

POLICY RECOMMENDATIONS

Commit the Commonwealth to achieving Vision Zero by 2050 - with a 50% reduction in road fatalities by 2035.

Maintain multi-use trail budget at \$41m annually (2022 dollars, adjusted for inflation), providing access to life-saving projects across the Commonwealth.

Update Virginia's 2011 State Bike Plan⁶ and 2004 Complete Streets policy.⁷

Pass "Safety Stop" and two-abreast/lane-control legislation, allowing bicyclists to reduce crash probability.

Rollerblading on the Capital Trail

Photo by Angela Hollowell



IMPROVING PUBLIC TRANSIT

WALKING, BIKING, RAIL, & PUBLIC TRANSIT

Rev. Dr. Faith B. Harris // Virginia Interfaith Power & Light // fharris@vaipl.org
Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org
Faith Walker // RVA Rapid Transit // faith@rvarapidtransit.org

EXECUTIVE SUMMARY

Safe, reliable public transportation is essential to ensuring that all Virginians have access to basic necessities like groceries, healthcare, schools, and jobs. As personal vehicles are responsible for the greatest share of Virginia's carbon emissions, high-quality public transit is also a key tool to meet the Commonwealth's climate goals. Yet public transportation is severely underfunded, leaving many Virginians with few or unsafe options for moving around their communities without a car. On top of its central importance to ensuring mobility for all, protecting public health, and meeting our climate goals, the dramatic inflation of gas and vehicle costs proves that providing access to fast, frequent public transit is critical to help keep households' costs down.

CHALLENGE

At a time of unprecedented federal funding and state budget surpluses, Virginia's transit systems continue to face uncertainty regarding resources for the essential services they provide. From the basics of employing enough bus operators and mechanics to increasing efforts to electrify public transit vehicles, providers need to be able to rely upon steadily increasing sources of funding. The austerity the commonwealth's dozens of transit providers have to deal with is an inexcusable disservice to the hundreds of thousands of Virginians who rely on bus or rail to get to work¹ and the thousands of dedicated public servants who work at our transit systems.

In 2018, riders of Hampton Roads Transit (HRT) suffered 18,653 scheduled buses that never showed up.² With new attacks on transit funding, that number is poised to increase.

This is unacceptable during a time when historically high gas prices and personal vehicle costs have many Virginians turning to low-cost or fare-free public transportation.³ The price of used cars has jumped by 29.8% – a whopping \$7,282.⁴ Without sufficient funding for maintaining and

improving existing infrastructure, as well as increasing frequency of service, commuters may be forced to shoulder the increasingly exorbitant cost of personal vehicle use.

Moreover, public transportation is an essential tool in our fight against climate change. Because underfunding of transit has led so many residents of the Commonwealth to use personal vehicles, transportation accounts for more than half of the state's emissions.⁵ Virginia cannot sustain such high levels of carbon pollution from cars and expect to meet pressing climate deadlines. Even if the U.S. is able to switch 70 million drivers to EVs, we still need to reduce per-capita vehicle miles traveled (VMT) by 20% in the next eight years via solutions that include increased transit ridership.

We need to reduce per-capita vehicle miles traveled by 20% in the next eight years to meet climate deadlines.

SOLUTION

For transit to reach its full potential as a climate and economic solution, the General Assembly must better fund transit systems. Lawmakers have already signaled their intention to do so through their authorization of the 2020 Transit Equity & Modernization Study. Now, they must follow through to implement recommendations to improve public transit and benefit all Virginians.

Specifically, Virginia needs increased funding for the expansion and frequency of routes, as well as for implementing safety and amenities such as benches, shelters, and trash receptacles to improve rider comfort and experience. The state should provide funding to install infrastructure, like sidewalks, crosswalks, signage and pedestrian signals, to improve rider safety and provide better accessibility for older adults and riders with disabilities, as well as attract new riders. Through executive and legislative action, elected officials should champion public transportation as a central strategy to meet Virginia's climate goals.

POLICY RECOMMENDATIONS

Remove the 2024 sunset clause on Virginia's zero-fare program to keep transit systems fare free.

\$10 Million per year for the Transit Ridership Incentive Program (TRIP) to expand regional service and keep transit affordable.

Increase transit funding to meet the needs identified in DRPT's 2022 Transit Modernization and Equity Study, including increased bus route frequency and improved quality of rider experience through safety infrastructure such as covered stops, benches, sidewalks, and pedestrian crosswalks.

Roanoke train station

Photo by Wyatt Gordon



EXPANDING RAIL

WALKING, BIKING, RAIL, & PUBLIC TRANSIT

Danny Plaughter // Virginians for High Speed Rail // danny@vhsr.com
Trip Pollard // Southern Environmental Law Center // tpollard@selcva.org

EXECUTIVE SUMMARY

Compelling energy, economic, and environmental benefits flow from maximizing the use of rail to move both people and goods. Virginia has made significant progress on passenger rail in recent years, but increased funding is needed to improve the speed, frequency, and reliability of service; extend service to new areas; modernize stations; and improve multimodal connections to them. Redirecting freight traffic from roads to rail is also important to reduce emissions and congestion, and steps needed include improving freight rail in the I-81 corridor and preserving abandoned rail corridors for future freight and passenger service. In addition, all passenger and freight trains and lines should be electrified, or other steps taken to eliminate emissions.

CHALLENGE

Virginia's efforts between 2008 and 2019 to improve and expand passenger rail service resulted in a 31% increase in service, a 65% increase in ridership, and expanded daily Amtrak Regional service to 2.5 million more Virginians.¹ In 2019, our regional trains carried over 924,000 passengers—taking 187+ million passenger miles off our roads, reducing fuel consumption by nearly 3.9 million gallons, and preventing the release of 35,000 metric tons of CO₂ pollution.²

In 2019, our regional trains took 187+ million passenger miles off our roads, reducing fuel consumption by nearly 3.9 million gallons.

Passenger rail needs continued investment to achieve even greater impacts. Train travel-times and reliability often are less than ideal, many stations need repair and updating, and transit connections between rail stations and activity centers are frequently limited or lacking altogether.

Additional service is needed as well. Our

passenger rail network is primarily set up for north-south travel, and there is very limited east-west service, especially connecting Hampton Roads and Southwest Virginia. Train travel is far less polluting and more energy efficient than driving. Electrifying rail in Virginia would be that much cleaner, but cost and other barriers have blocked this so far.

In terms of freight, a central challenge is that Class One railroads are privately owned and driven by a focus on maximizing short-term returns to shareholders rather than the public interest. Recently, freight railroad companies have focused on downsizing and disinvesting their assets and workforce, leaving our roadways and truckers to handle the additional freight movement.

SOLUTION

Since December 2019, the state has announced and finalized agreements with CSX and Norfolk Southern to purchase 412 miles of railroad right-of-way and 251 miles of track, as well as to construct 50 miles of new railroad track, thus doubling the rail capacity between Washington, D.C. and Virginia by expanding the Long Bridge over the Potomac River.³ These agreements, which are core parts of the Transforming Rail in Virginia program (TRVA), will allow six new roundtrip Amtrak Regional trains, the extension of service from Roanoke to Christiansburg, and five more Virginia Railway Express trains on the Fredericksburg line (including weekend service). Additionally, in 2020 the General Assembly created the Virginia Passenger Rail Authority (VPRRA) to own, maintain, implement, and operate the Commonwealth's passenger rail network.

Funding for the TRVA program is essential. In addition to increasing service, the TRVA projects should reduce the travel time of our trains and increase their reliability. Implementing these and other projects also depends on continuing to set up the VPRRA.

The state has completed a feasibility study for the return of direct east-west passenger rail service along the Commonwealth Corridor as part of their 2022 Virginia Rail Plan, and they are updating their station modernization and improvement plan.

The TRVA agreements will allow for future electrification of our rail service. We should look for opportunities such as dual-mode engines, battery electric engines, and other technologies that will allow the state to begin constructing electrified portions of our rail corridors.

We should also look at incentives for moving freight from trucks to rail while also being prepared for additional abandonments of rail lines by the Class One railroads and ensuring the Commonwealth is ready to purchase them for future passenger and/or freight rail service. We should explore all opportunities to make freight railroads more responsive and responsible to public interest concerns.

POLICY RECOMMENDATIONS

Protect rail funding and implement the Transforming Rail in Virginia program.

Secure the inclusion of the Commonwealth Corridor (New River Valley - Charlottesville - Richmond - Hampton Roads) study into the Virginia Statewide Rail Plan.

Modernize rail stations and provide multimodal connections between stations and activity centers.

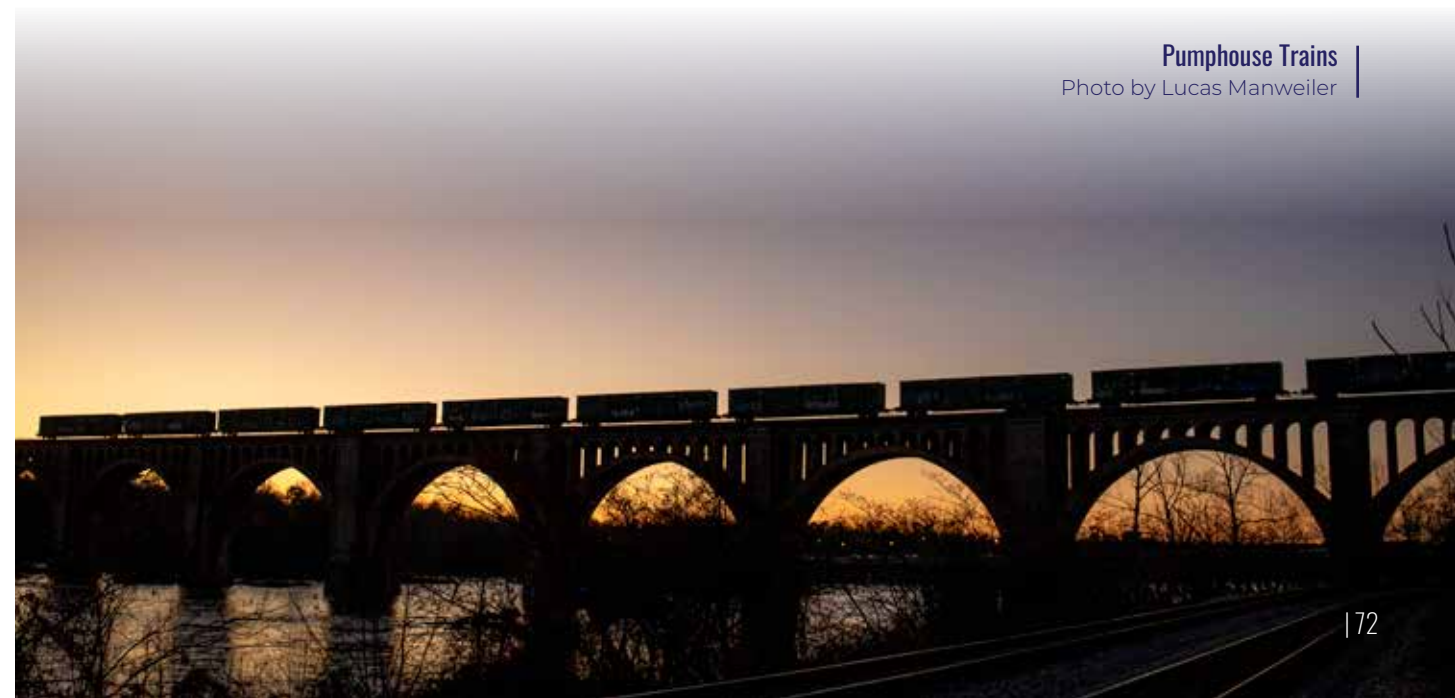
Authorize a state study of opportunities to expedite the transition to zero-emissions trains and infrastructure.

Fund a rigorous study of the economic and environmental life-cycle costs and benefits of adding new freight capacity on rail vs. on the highway in the I-81 Corridor.

Protect any potentially abandoned rail corridors through public purchase for future service, rails with trails, and/or other transportation uses.

Pumphouse Trains

Photo by Lucas Manweiler



CLIMATE & ENERGY

Virginia has enacted significant policies to move the Commonwealth towards a clean energy future. We must ensure these policies are enacted and expand upon these commitments through responsibly developing clean energy infrastructure, ramping up energy efficiency and solar investments, and ensuring an equitable transition to a clean energy economy. To provide reliable and affordable services for Virginians, we must leverage this clean energy transition to address inequalities baked into the laws that currently regulate our current utility system. Preventing the buildout of fossil fuel & mining infrastructure, improving protections for households from utility disconnections, and curbing electric utilities' political influence will effectively combat climate change and ensure affordable energy for Virginians.

RENEWABLE ENERGY & ENERGY EFFICIENCY & CONTACT INFORMATION	75
REALIZING VIRGINIA'S CLEAN ENERGY TRANSFORMATION	77
POWERING SCHOOLS WITH LOW-COST SOLAR	79
CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY	81
ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION	83
GETTING IT RIGHT WITH UTILITY SCALE SOLAR	85
FOSSIL FUEL & MINING INFRASTRUCTURE SUMMARIES & CONTACT INFORMATION	87
PREVENTING PIPELINE HARMS	89
PROTECTING OUT WATER FROM METALS MINING	91
UTILITY ACCOUNTABILITY SUMMARIES & CONTACT INFORMATION	93
CURBING ELECTRIC UTILITIES' POLITICAL INFLUENCE	95
ENSURING ACCESS TO ESSENTIAL SERVICES	97

EXECUTIVE SUMMARIES & CONTACT INFORMATION

REALIZING VIRGINIA'S CLEAN ENERGY TRANSFORMATION

The Commonwealth is in the midst of a clean energy transformation to reduce the power sector's extensive pollution burden and spur innovation and economic growth. Virginia's goal is to have a carbon-free power sector by 2050. The Virginia Clean Economy Act and the Regional Greenhouse Gas Initiative are two critical commitments made by the Commonwealth that work together to achieve this goal. Every year, they will lower pollution, increase energy efficiency, create jobs, and improve climate resiliency across the state. Virginia must keep its commitments, fully implement the policies, and realize the benefits of this clean energy transformation.

Nate Benforado // Southern Environmental Law Center // nbenforado@selcva.org
Lena Lewis // The Nature Conservancy // lana.lewis@tnc.org

POWERING SCHOOLS WITH LOW-COST SOLAR

Solar schools save money, create healthier environments for our children, and reduce climate-warming emissions. While new and renovated schools can be made net-zero by combining solar with an energy-efficient design, many schools are still being built to yesterday's design standards, causing districts to lose out on savings that could otherwise be used for learning materials, teaching equipment, and afterschool programs.

Now is the time for Virginia to bring solar and net-zero energy schools to every community. There are already four 100% renewable energy powered K-12 schools in Virginia, and building this way does not need to cost any more than a traditional building. School districts should pursue net-zero in all new construction projects.

McKenna Dunbar // Sierra Club Virginia Chapter // mckenna.dunbar@sierraclub.org
Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org

CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY

Virginians pay the 8th highest electricity bills nationwide, with families living in poverty using a disproportionately high 21% of their income for energy, on average. But much of the energy Virginians pay for is wasted. Energy efficiency—achieving the same output with less energy—has been proven to lower energy bills and reduce energy-related pollution. Making efficiency the bedrock component of Virginia's energy policy will reduce carbon pollution and household costs while creating local, good paying jobs. Virginia can substantially benefit from ambitious energy efficiency policies such as the electrification of appliances, local autonomy over building codes, and stronger energy efficiency targets for utilities.

Laura Gonzalez // Clean Virginia // laura@cleanvirginia.org
Lena Lewis // The Nature Conservancy // lana.lewis@tnc.org
Blair St. Ledger-Olson // Climate Cabinet Action // blair@climatecabinet.org
Mary-Stuart Torbeck // The Sierra Club, Virginia Chapter // mary-stuart.torbeck@sierraclub.org

ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION

Virginia is poised to be the first Southern state to make a massive and historic transition to clean energy thanks to the 2020 passage of the Virginia Clean Economy Act (VCEA). Commonsense changes to the laws governing electric utilities are essential to ensure that the resulting clean electricity is affordable and accessible for all Virginians.

Kendl Kobbervig // Clean Virginia // kendl@cleanvirginia.org
Joy Loving // Climate Action Alliance of the Valley // jal_1998@yahoo.com
Emily Piontek // Appalachian Voices // emily@appvoices.org

GETTING IT RIGHT WITH UTILITY SCALE SOLAR

Virginia's important transition to renewable energy relies heavily on utility-scale solar facilities. New state policies are needed to maximize utility-scale solar's environmental benefits and to minimize the land-use impacts on farms, forests, and streams. With well-designed incentives, solar can give new productive life to Virginia's brownfields, including post-mining lands, large commercial and industrial sites, and other marginal lands. Best management practices, including the reduction of soil compaction and the use of appropriate stormwater runoff calculations, should be applied to reduce downstream water quality impacts.

Patrick Fanning // Chesapeake Bay Foundation // PFanning@cbf.org
Emily Piontek // Appalachian Voices // emily@appvoices.org
Bob Shippee // Sierra Club Virginia Chapter // rsoxbob@gmail.com
Kate Wofford // Alliance for the Shenandoah Valley // kwofford@shenandoahalliance.org



Net-zero, energy-affordable housing

Photo by Kenneth Kelly

RENEWABLE ENERGY & ENERGY EFFICIENCY

VCN POINT OF CONTACT

Narissa Turner // narissa@vcnva.org
Policy & Campaigns Manager - Climate & Energy

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

REALIZING VIRGINIA'S CLEAN ENERGY TRANSFORMATION

RENEWABLE ENERGY & ENERGY EFFICIENCY

Nate Benforado // Southern Environmental Law Center // nbenforado@selcva.org
Lena Lewis // The Nature Conservancy // lena.lewis@tnc.org

EXECUTIVE SUMMARY

The Commonwealth is in the midst of a clean energy transformation to reduce the power sector's extensive pollution burden and spur innovation and economic growth. Virginia's goal is to have a carbon-free power sector by 2050. The Virginia Clean Economy Act and the Regional Greenhouse Gas Initiative are two critical commitments made by the Commonwealth that work together to achieve this goal. Every year, they will lower pollution, increase energy efficiency, create jobs, and improve climate resiliency across the state. Virginia must keep its commitments, fully implement the policies, and realize the benefits of this clean energy transformation.

CHALLENGE

When power plants burn fossil fuels, they emit carbon dioxide pollution, accelerating the impacts of climate change such as increased precipitation and flooding events, more severe storms, and more frequent, very hot days. Other power plant emissions can have localized negative impacts on the surrounding environment and public health, especially for low-wealth communities and communities of color. Those localized pollutants include particulates, nitrogen compounds, mercury and other chemicals which can cause acute respiratory distress, chronic health effects, and ecosystem disruptions.

Furthermore, fossil fuels leave Virginians vulnerable to the inherent price volatility of natural gas and coal. Utility customers are forced to pay the bill when utilities continue to make risky fossil fuel investments.

To minimize our pollution burden and price risk from fossil fuels, the Commonwealth is in the midst of a clean energy transformation. This transformational shift is critical and necessary for public health, the environment, and the economy.

The General Assembly voted in 2020 to join the Regional Greenhouse Gas Initiative (RGGI) – a successful multi-state emissions reduction program. States participating in RGGI will reduce their power sector carbon dioxide by at least 30% over this decade.

Additionally, the Virginia Clean Economy Act (VCEA) sets out a path to eliminate power sector carbon pollution by 2050 through energy efficiency standards, increases in rooftop solar power, and investments in utility-scale solar, wind, and energy storage.

Now that Virginia has explicit commitments to fulfilling a clean energy transformation, these climate goals can only be achieved by both steadfast climate action from state leaders and consistent regulatory implementation across state agencies.

SOLUTION

RGGI's market-based approach is already delivering results. Power plant emissions are being driven down and revenues brought in. Thanks to Virginia's participation in RGGI, communities faced with the direct impacts of climate change have already received 49 grants to address recurrent flooding across the Commonwealth. More than 2,300 highly-efficient affordable housing units are under construction thanks to Virginia's RGGI participation. Hundreds of thousands of low-income households stand to benefit from RGGI energy efficiency funds, reducing their energy costs and improving their health while creating local jobs in energy efficiency.¹

By 2030, the VCEA will improve health impacts including 24,000 avoided asthma attacks, 100,000 avoided lost workdays, and 856 avoided deaths.

Virginia needs RGGI to continue curtailing power plant emissions and provide desperately needed resources—on a consistent and prompt basis—to support low-income energy efficiency programs and to strengthen statewide resilience to climate change. The VCEA will further this work. With mandatory retirements of polluting power plants, frontline communities will benefit from improved air quality. Increased energy efficiency requirements will help reduce energy burdens. The average Virginia family will save an estimated \$30/year by 2030 thanks to the VCEA.²

Virginia will also realize significant economic and public health benefits as this clean energy transformation proceeds. According to one estimate, the VCEA will result in a direct increase of 10,000 jobs by 2025. And by 2030, cumulative positive health impacts include 24,000 avoided asthma attacks, 100,000 avoided lost workdays, and 856 avoided deaths.³

Virginia must fully realize the transformational benefits of the VCEA and RGGI. Through proper implementation, these historic laws provide the pathway and means for a carbon-free power sector in Virginia by 2050.

POLICY RECOMMENDATIONS

Maintain our commitment to clean energy transformation and fully implement the VCEA.

Maintain Virginia's participation in our regional emissions reduction program, RGGI.

Maintain RGGI fund allowances for the Community Flood Preparedness Fund and energy efficiency programs; do not dilute funding streams to fill General Fund gaps or other funding needs.

Monarch butterfly (*Danaus plexippus*)

Photo by Lori A Cash



POWERING SCHOOLS WITH LOW-COST SOLAR

RENEWABLE ENERGY & ENERGY EFFICIENCY

McKenna Dunbar // Sierra Club Virginia Chapter // mckenna.dunbar@sierraclub.org
Victoria Higgins // Chesapeake Climate Action Network // vhiggins@chesapeakeclimate.org

EXECUTIVE SUMMARY

Solar schools save money, create healthier environments for our children, and reduce climate-warming emissions. While new and renovated schools can be made net-zero by combining solar with an energy-efficient design, many schools are still being built to yesterday's design standards, causing districts to lose out on savings that could otherwise be used for learning materials, teaching equipment, and afterschool programs.

Now is the time for Virginia to bring solar and net-zero energy schools to every community. There are already four 100% renewable energy powered K-12 schools in Virginia, and building this way does not need to cost any more than a traditional building.¹ School districts should pursue net-zero in all new construction projects.

CHALLENGE

High energy bills absorb funding that is sorely needed elsewhere in schools' budgets. Energy consumption is the second highest cost for schools nationwide, which siphons funds away from where they belong: funding educational staff and resources for our students.² Sadly, Virginia is in the bottom ten states for per-pupil funding despite being a top ten state for household income.³ Savings from energy bill reductions could be used to address a number of high-priority in-school educational needs. Findings from the Virginia Department of Education show that most school buildings are over 50 years old, with 15.16% of these buildings having major renovation projects since 2015.⁴

State legislation has expanded the ability for local governments and school districts to install onsite solar arrays using power purchase agreements (PPAs), energy service contracts, and grants. Today, almost any school with a properly designed roof can add a solar array with no upfront capital expenditure and immediately begin to achieve energy savings that continue for decades.

At least 20 school districts in Virginia have installed solar using PPAs. Solar has been most successful even in school districts with limited

funding: the Isle of Wight boasts the greatest amount of solar followed by the City of Richmond. In 2020, Virginia ranked as the eighth state with the highest installed solar capacity in the country, at 20,214 kW.⁵ For new schools and those undergoing major renovations, school districts can combine solar with all-electric, energy-efficient design and construction to build net-zero schools that produce as much energy as they consume. These schools produce energy savings along with climate, health, and educational benefits. Through IIJA (Infrastructure Investment and Jobs Act) funds, \$500 million worth of grants are available as part of the U.S. Department of Energy's Building Technologies Office to improve energy efficiency and install renewable energy at public school facilities.⁶

Yet solar roofs, on-site solar, and net-zero schools remain the exception, not the rule, especially for schools serving low-income children and children of color. Because Virginia's schools have largely been underfunded and are in need of repair, hundreds of millions of dollars will be spent over the next few years on school facilities, creating a unique opportunity to implement net zero design.

SOLUTION

Virginia's schools can have more money for critical resources like teachers' salaries, books, after-school programs, and playgrounds by cutting energy bills through on-site solar, all while reducing the state's greenhouse gas emissions portfolio year-over-year. Savings vary based on factors including size of system and percentage of energy needs met by the panels, but for example, the solar systems that Highland Springs High School installed cover 35% of their electricity needs and will save \$420,000 over the next 25 years. In other states, savings from solar have allowed school districts to meaningfully boost teachers' salaries.⁷

The state should make solar-ready roofs and net-zero design the default standard for new schools and those undergoing major renovations. Failing to design to net-zero means schools cost more to operate over the life of the building

and students miss out on health and educational benefits that come with highly efficient, all-electric schools powered by on-site solar panels.

Existing schools renovated to be net-zero recouped costs within 15 years.

Designing to net-zero is cost-effective. A study conducted for Fairfax County Schools concluded that solar schools pay for themselves in just ten years through savings on energy bills. Existing schools renovated to be net-zero recouped costs within 15 years,⁸ after which additional savings can be directed towards other essential programs. These savings are even greater today as Virginia and the nation face ballooning energy costs. As more than half of Virginia's schools are over 50 years old, renovations are needed, and

savings should be maximized through net-zero standards.⁹

New roofs on existing schools that are not undergoing major renovation should be made solar-ready so school districts do not leave money on the table. Solar-ready roofs are straight-forward; the roof must be strong enough to hold the added weight of solar panels, use solar-appropriate roofing materials, and leave ample space for solar panels amongst other roof equipment.

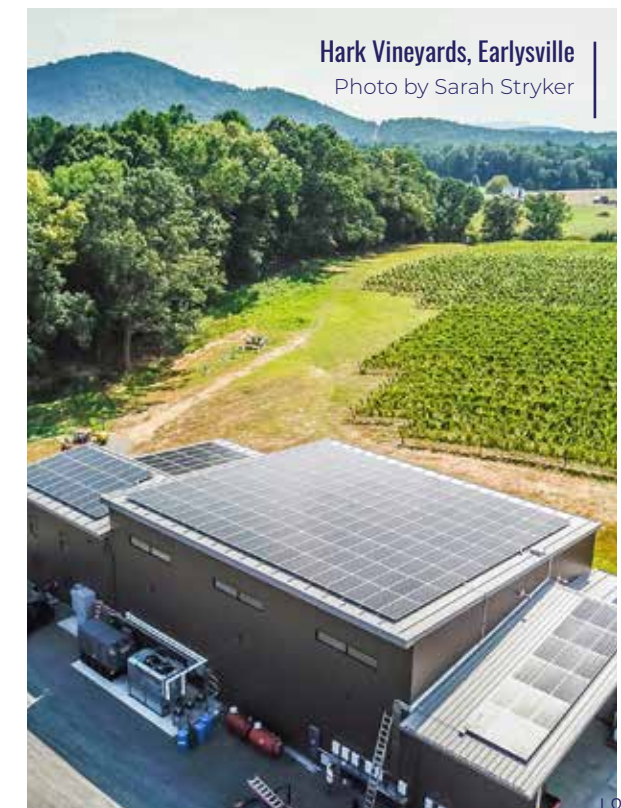
Current Virginia law already requires new and substantially renovated local and state buildings over 5,000 square feet to meet stringent energy efficiency requirements. These sections should be amended to include a net-zero energy standard for schools.

POLICY RECOMMENDATIONS

Require new school buildings and substantially renovated school buildings to have on-site solar arrays and be designed and built to net zero standards with solar-ready roofs, enabling the addition of solar at no upfront cost through PPA financing or using other financing methods.

Create a 'gap fund' for school divisions to access. If the school division, within the design or redesign phase of a school building, determines there are insufficient funds to achieve net zero, the school division may access the gap fund. The gap fund can consist of state and federal dollars.

Create, within the Department of Education, a School Superintendent Ombudsman on Clean Energy Transition. The position shall be responsible for liaising between school division leaders (superintendents and facilities staff), school board members, and private contractors to save taxpayer money and make buildings healthier. Ombudsmans' duties should include connecting school divisions in the design or redesign phase with private solar installers for an on-site solar consultation.



Hark Vineyards, Earlysville
Photo by Sarah Stryker

CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY

RENEWABLE ENERGY & ENERGY EFFICIENCY

Laura Gonzalez // Clean Virginia // laura@cleanvirginia.org
Lena Lewis // The Nature Conservancy // lena.lewis@tnc.org
Blair St. Ledger-Olson // Climate Cabinet Action // blair@climatecabinet.org
Mary-Stuart Torbeck // The Sierra Club, Virginia Chapter // mary-stuart.torbeck@sierraclub.org

EXECUTIVE SUMMARY

Virginians pay the 8th highest electricity bills nationwide, with families living in poverty using a disproportionately high 21% of their income for energy, on average.^{1,2,3} But much of the energy Virginians pay for is wasted.⁴ Energy efficiency—achieving the same output with less energy—has been proven to lower energy bills and reduce energy-related pollution.⁵ Making efficiency the bedrock component of Virginia’s energy policy will reduce carbon pollution and household costs while creating local, good paying jobs.⁶ Virginia can substantially benefit from ambitious energy efficiency policies such as the electrification of appliances, local autonomy over building codes, and stronger energy efficiency targets for utilities.

CHALLENGE

Though energy efficiency is a smart investment, longstanding barriers block its full implementation in Virginia. While Virginia has passed significant energy efficiency legislation in the past, the Commonwealth’s chronically high electricity bills and energy burden - the percentage of gross household income spent on energy costs - show Virginia still has untapped energy efficiency potential.^{7,8,9} This is also an environmental justice concern, as high energy costs disproportionately impact low-income, Black, and Latinx families.^{10,11,12}

Virginians pay the 8th highest electricity bills nationwide, with families living in poverty using a disproportionately high 21% of their income for energy.

Numerous barriers are keeping the benefits of energy efficiency out of the hands of Virginians. The upfront costs of energy efficiency retrofits deter low-to-moderate income households, which stand to benefit the most from savings. Lack of information also impedes the widespread

uptake of such retrofits. Though renters may want to be more energy efficient to reduce costs, they are restricted by what their building owners are willing to do. Business owners can also be limited by upfront costs and lack of information.

While it’s easier to make a building more efficient during its initial construction, builders lower their construction costs by excluding energy efficiency measures - locking Virginians into 50 to 100 years of higher energy costs. Existing buildings can increase efficiency by replacing fossil fuel-powered appliances, such as heating systems, with more efficient electric versions.¹³ Unfortunately, current policies restrict some opportunities for this beneficial electrification. Furthermore, utility monopolies’ regulations incentivize maintaining higher energy demand over energy efficiency. Virginians need ambitious state level policy to unlock the benefits of energy efficiency in the Commonwealth.

SOLUTION

Virginia can lower energy costs, reduce pollution, and spur job growth by implementing aggressive energy efficiency policies.

Cost-effective efficiency upgrades can save the average Virginia household \$729 a year on utility bills.¹⁴ Businesses also benefit from energy efficiency, as the average commercial building wastes 30% of its energy.¹⁵ Energy efficiency is also a powerful climate action tool. Tapping the full U.S. energy efficiency potential could cut national carbon emissions 50% by 2050.¹⁶ Lastly, energy efficiency generates the highest number of jobs in Virginia’s energy sector. In 2021, the efficiency industry sustained over 73,000 jobs, compared to less than 28,000 from power generation and the fuel industry combined.¹⁷

A suite of complementary policies can expand these benefits in Virginia. Implementing more

efficient building codes for new and renovated buildings and electrifying fossil fuel-powered appliances can further reduce energy costs and pollution.¹⁸ Stronger efficiency targets also help electric utility monopolies deploy broader efficiency measures and programs, avoiding costly new generation.¹⁹

Local governments should also be empowered to advance energy efficiency. Localities need to be granted authority to (a) require building owners to “benchmark” their buildings’ energy intensity so potential tenants know energy costs in advance, incentivizing owners to make efficiency upgrades, and (b) adopt “stretch codes” with stronger efficiency and climate standards for buildings in their jurisdictions. Lastly, it is critical to protect localities from preemption legislation that revokes their existing authority to electrify new building construction and make the best, safest choice for their communities.

3-year-old, Jehan Bhedwar, holds an energy-efficient light bulb

Photo by Cyrus Bhedwar



POLICY RECOMMENDATIONS

Extend and strengthen the Energy Efficiency Resource Standard beyond 2025, including energy savings targets for low-income customers.

Allow electric utilities to electrify appliances when it is more efficient than continued reliance on fossil-fuel powered appliances.

Protect localities’ existing authority to meet health and safety goals through ordinances for electric-only new construction; allow localities to 1) adopt codes with stronger energy efficiency and climate standards, and 2) require building owners to publicize buildings’ energy intensity.

Establish minimum appliance efficiency requirements to exceed federal standards.

Maintain Virginia’s participation in the Regional Greenhouse Gas Initiative, including the 50% revenue allocation to low-income energy efficiency programs.

ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION

RENEWABLE ENERGY & ENERGY EFFICIENCY

Kendl Kobbervig // Clean Virginia // kendl@cleanvirginia.org
Joy Loving // Climate Action Alliance of the Valley // jal_1998@yahoo.com
Emily Piontek // Appalachian Voices // emily@appvoices.org

EXECUTIVE SUMMARY

Virginia is poised to be the first Southern state to make a massive and historic transition to clean energy thanks to the 2020 passage of the Virginia Clean Economy Act (VCEA). Commonsense changes to the laws governing electric utilities are essential to ensure that the resulting clean electricity is affordable and accessible for all Virginians.

CHALLENGE

The current state laws regulating electric utilities hinder an affordable and equitable clean energy transition in Virginia. Specifically, Virginia's regulatory system rewards investor-owned utility (IOU) monopolies for capital-intensive investments rather than cost-saving measures for customers. Electric IOUs receive guaranteed profits for capital investments, so the more expensive a project is, the more the utility profits.¹ Additionally, utilities are able to pass along 100% of fuel costs to customers and are incentivized to sell as much energy as possible instead of prioritizing energy efficiency, which saves money and reduces pollution.^{2,3,4} As Virginia invests in a clean energy system, we need strong tools to ensure utilities pursue energy efficiency and least-cost, zero-carbon projects that benefit energy customers.

Electric IOUs receive guaranteed profits for capital investments, so the more expensive a project is, the more the utility profits.

Current restrictions limit the State Corporation Commission's (SCC) ability to mitigate household energy costs during Virginia's clean energy transition. In a traditional regulatory model, utility monopolies recover costs and profits through base rates. Regulators establish these base rates in periodic reviews in which the SCC scrutinizes utilities' costs and sets a fair profit level. Since 2007, however, pro-utility legislation has introduced

cost recovery mechanisms that allow utilities to pile fees onto customer bills while restricting regulators' ability to ensure Virginians pay a fair price for electricity.

This utility-backed legislation has resulted in Virginians paying some of the highest energy prices in the nation.⁵ Three-in-four Virginia households pay an unaffordable percentage of their monthly income on electricity bills with a disproportionate burden falling on low-income, Black, Hispanic, Native American, and older adult households.^{6,7}

SOLUTION

The clean energy transition provides an opportunity to ensure all Virginians have access to affordable and renewable energy. A successful 2020 bipartisan bill provides a practical playbook for doing so. House Bill 528 restored the SCC's authority to determine cost recovery periods for early power plant retirements and unlocked \$300 million in refunds and a \$50 million rate cut for Dominion Energy customers. Virginia needs additional measures that equip regulators to ensure the clean energy transition does not worsen the financial reality for low-income households and communities of color already experiencing the brunt of higher energy costs and impacts from the climate crisis. These measures include restoring the SCC's authority to determine the most cost-effective recovery mechanisms for utility spending and to fully refund customers when utilities overcharge.

Near-term regulatory reforms must be paired with a longer-term shift towards more environmental and social outcome driven profit incentives for a truly equitable transition to clean energy. The VCEA presents an opportunity to incentivize monopoly utilities to alleviate economic hardship, environmental injustices, and climate impacts. Connecticut, Illinois, North Carolina and Washington have passed laws to

connect utility profits with societal goals like decarbonization and energy efficiency. Other states have advanced measures holding utilities accountable for fuel costs by splitting the risks associated with fossil fuel price volatility between utilities and customers. Passing immediate regulatory reform measures while exploring alternative structures to Virginia's utility incentive system will help ensure that an affordable and equitable clean energy future is on the horizon.

Dark-Sky Preservation, Shenandoah National Park

Photo by Paul-Michael Ferguson

POLICY RECOMMENDATIONS

Restore the SCC's authority to reduce rates when utilities will profit above their authorized rate of return.

Restore SCC's authority to determine the most cost-effective recovery mechanism for utility spending.

Require utilities to refund 100% of customer overcharges.

Implement a cost-sharing mechanism that splits the risks of fossil fuel volatility between utilities and electricity customers.

Request that the State Corporation Commission and Virginia Energy study alternatives to the existing regulatory system, such as those that compensate utility investments based on environmental and social outcomes rather than a project's price.

GETTING IT RIGHT WITH UTILITY SCALE SOLAR

RENEWABLE ENERGY & ENERGY EFFICIENCY

Patrick Fanning // Chesapeake Bay Foundation // PFanning@cbf.org
Emily Piontek // Appalachian Voices // emily@appvoices.org
Bob Shippee // Sierra Club Virginia Chapter // rsoxbob@gmail.com
Kate Wofford // Alliance for the Shenandoah Valley // kwofford@shenandoahalliance.org

EXECUTIVE SUMMARY

Virginia's important transition to renewable energy relies heavily on utility-scale solar facilities. New state policies are needed to maximize utility-scale solar's environmental benefits and to minimize the land-use impacts on farms, forests, and streams. With well-designed incentives, solar can give new productive life to Virginia's brownfields, including post-mining lands, large commercial and industrial sites, and other marginal lands. Best management practices, including the reduction of soil compaction and the use of appropriate stormwater runoff calculations, should be applied to reduce downstream water quality impacts.

CHALLENGE

Virginia has experienced increases in both the number and size of utility-scale solar facilities, and this trend is likely to continue as Virginia transitions away from fossil fuel based generation under the Virginia Clean Economy Act (VCEA).¹ This creates tax revenue, construction jobs, and lease payments for many rural communities, but also raises some challenges related to land use. On average, utility-scale solar requires seven to ten acres per megawatt produced. Many of these facilities are being sited in rural localities with little experience permitting large construction projects. One recent survey of Virginia localities found that a majority of localities are either in the process of updating an existing solar ordinance or are considering adopting such an ordinance.² Meanwhile, 69% of localities surveyed do not identify land areas for large-scale solar siting in their comprehensive plans.³

New state policies are needed to maximize utility-scale solar's environmental benefits and to minimize the land-use impacts on farms, forests, and streams.

Virginia needs greater deployment of renewable energy projects. However, all projects should take into account site-specific conditions. Decision makers must ensure proper site selection and

heed practices to minimize any associated negative impacts. Fortunately, these challenges can be addressed if handled correctly. Virginia should look to examples in other states and countries where stakeholders are committed to balancing meaningful utility-scale solar deployment with careful protection of farms and forests and with minimal impact on habitat and historic, cultural and scenic resources.

SOLUTION

Virginia's policymakers should implement and promote best practices for utility-scale solar, including:

SELECT SITES STRATEGICALLY

Appropriate direction should be given to the industry by prioritizing and incentivizing development on post-mining land, landfills, brownfields, and industrial or commercial sites to reduce unnecessary impacts to forests and agriculturally productive lands.⁴

MINIMIZE WILDLIFE HABITAT DISTURBANCE & PROTECT ECOLOGY

Ensure that solar developers are communicating early and often with federal and state wildlife agencies to minimize impacts on habitat and movement of wildlife.

FOLLOW BEST MANAGEMENT PRACTICES

Projects should include recognized best management practices for water quality and sustainable groundskeeping. Water Quality protections/standards (time of year restrictions, turbidity/TSS standards, etc.) should be incorporated into the state permitting process addressing potential in-stream impacts. The use of native pollinator plants can improve erosion control, pesticide avoidance, and improve stormwater infiltration, wildlife habitat, and reduce long-term maintenance costs and emissions. Construction practices should be required that reduce soil compaction and return topsoil to the site. Planting vegetation around and under panels can increase nitrogen retention, total nitrogen, and carbon sequestration above baseline, so agri-voltaics should be encouraged where practicable.

MINIMIZE ANTICIPATORY CLEARING OF FORESTED LANDS

Anticipatory clearing occurs when a landowner clears the forested land in anticipation of submitting an application for a solar project, but such clearing should be conducted subject to best management practices applicable for land development rather than less stringent forestry requirements.

PROVIDE LOCALITIES WITH TECHNICAL ASSISTANCE

Support localities grappling with questions about utility-scale solar through state-supported technical assistance to ensure localities have sufficient expertise to appropriately consider and regulate solar land use within their jurisdictions.

POLICY RECOMMENDATIONS

Incentivize solar on compromised land by funding the Virginia Brownfield and Coal Mine Renewable Energy Grant Program with \$35 million annually, and removing restrictions on funding sources.

Increase capacity at Department of Energy and Virginia Cooperative Extension Service to implement pilot projects that demonstrate ways solar development can complement agriculture; and provide technical support for localities implementing solar ordinances.

Strengthen DEQ's current minimum standards for erosion and sediment control and stormwater management and associated staffing levels to ensure controls protect local water quality, consider and mitigate for adverse cumulative impacts to ecosystem services, and are consistent with Chesapeake Bay TMDL goals.

Develop sound regulations that require solar projects to minimize the displacement of prime agricultural soils and forested lands and, where unavoidable, to adequately mitigate adverse impacts to these resources.

Carter Mountain Orchard, Charlottesville

Photo by Sarah Stryker





EXECUTIVE SUMMARIES & CONTACT INFORMATION

PREVENTING PIPELINE HARMS

Poorly planned and constructed fracked-gas pipeline projects threaten Virginia's fragile water resources and ecosystems. As the construction of pipeline projects harms water quality, the operation of these facilities is associated with the emission of methane, a potent greenhouse gas, as well as carbon dioxide emissions driven by end use, posing serious consequences to the climate. Ultimately, Virginia communities bear the brunt of negative public health impacts to water and air quality, along with economic harm to farmland and other critical agricultural lands. Additionally, the overbuilding of gas infrastructure delays our transition to renewable energy sources and prevents the Commonwealth from achieving equitable clean energy goals. Virginia must strengthen protections for the water resources and communities jeopardized by fossil fuel infrastructure.

Peter Anderson // Appalachian Voices // peter@appvoices.org
Connor Kish // Sierra Club Virginia Chapter // connor.kish@sierraclub.org
David Sligh // Wild Virginia // david@wildvirginia.org

PROTECTING OUR WATERS FROM METALS MINING

Mining for gold, copper, zinc, and lead took place in the 19th and early 20th century in Virginia, evidenced by hundreds of abandoned mines along the Gold-Pyrite Belt extending from Fairfax to Halifax Counties. A large-scale version of this toxic industry is now moving forward without a comprehensive regulatory framework nor sufficient financial assurances, putting public health and drinking water at risk.

We must support communities most at risk, protect water resources, and develop an effective regulatory framework at the state level for mining metals.

Patrick Fanning // Chesapeake Bay Foundation // PFanning@cbf.org
Stephanie Rinaldi // Friends of Buckingham // rinaldis10@gmail.com
Jessica Sims // Appalachian Voices // jessica@appvoices.org

FOSSIL FUEL & MINING INFRASTRUCTURE

VCN POINT OF CONTACT

Narissa Turner // narissa@vcnva.org
Policy & Campaigns Manager - Climate & Energy

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

PREVENTING PIPELINE HARMS

FOSSIL FUEL & MINING INFRASTRUCTURE

Peter Anderson // Appalachian Voices // peter@appvoices.org
Connor Kish // Sierra Club Virginia Chapter // connor.kish@sierraclub.org
David Sligh // Wild Virginia // david@wildvirginia.org

EXECUTIVE SUMMARY

Poorly planned and constructed fracked-gas pipeline projects threaten Virginia's fragile water resources and ecosystems. As the construction of pipeline projects harms water quality, the operation of these facilities is associated with the emission of methane, a potent greenhouse gas, as well as carbon dioxide emissions driven by end use, posing serious consequences to the climate. Ultimately, Virginia communities bear the brunt of negative public health impacts to water and air quality, along with economic harm to farmland and other critical agricultural lands. Additionally, the overbuilding of gas infrastructure delays our transition to renewable energy sources and prevents the Commonwealth from achieving equitable clean energy goals. Virginia must strengthen protections for the water resources and communities jeopardized by fossil fuel infrastructure.

CHALLENGE

Continued expansion of fossil fuel infrastructure is at odds with a healthy future for the Commonwealth, and it runs counter to climate mitigation measures recommended by the Intergovernmental Panel on Climate Change (IPCC).¹ Although Virginia has passed laws to promote clean energy and improve accountability measures, new fossil-fuel infrastructure projects continue to be licensed and ultimately harm Virginia communities. Water and air pollution from fossil fuel infrastructure impedes the historic goals set in federal and state laws, and the resulting harms tend to fall disproportionately on Black, Indigenous, low income, and elderly communities.²

Representative of the overbuilding and inappropriate siting of pipeline projects, the Mountain Valley Pipeline (MVP) will increase damage to waterways and private water sources in Southwest Virginia with any further construction. In addition to the 300+ violations for which the

company has been cited,³ MVP has the potential to emit greenhouse gasses on a scale comparable to 18 coal-fired power plants.⁴ Construction of the project has wrought significant harm on local environments, damaged Indigenous cultural and sacred sites,⁵ and negatively impacted rural communities and residents' livelihoods. The MVP currently lacks necessary federal permits and authorizations to proceed, but if completed and if placed into operation, the pipeline could be responsible for nearly 1% of all U.S. energy sector greenhouse gas emissions.⁶

In addition to the 300+ violations for which the company has been cited, MVP has the potential to emit greenhouse gasses on a scale comparable to 18 coal-fired power plants.

New expansion projects proposed for Eastern Virginia, like the 'Virginia Reliability Project,' raise concerns about construction through areas overburdened with existing infrastructure and pollution.⁷ Effects on wetlands, especially in areas prone to recurrent flooding, and private wells and springs are also of great concern.

SOLUTION

Fossil fuels are the energy of Virginia's past, not our future. Given the steps necessary to mitigate the worsening climate crisis, the critical point we have reached in that crisis, and potential for a robust clean energy future for the Commonwealth, new fossil fuel infrastructure should not be pursued. We have learned from projects like the Mountain Valley Pipeline that current laws and regulations do not adequately protect water resources, public health or the environment from the construction of new fossil fuel infrastructure.

Absent a ban, any new fossil fuel build out, including both interstate and intrastate pipelines, must be thoroughly and holistically scrutinized through processes that fully engage and respect

the public's views and interests. Fossil fuel projects should receive a comprehensive review, including cumulative health and environmental impacts on nearby communities. For projects already in process, enforcement of pollution laws must be prioritized, and polluters must be held fully accountable, regardless of project completion or abandonment. Review processes should include bonding requirements for appropriate funding or insurance coverage, and include stringent environmental restoration requirements.

Virginia lawmakers should strengthen state review of projects and increase public involvement and participation in those reviews. Ultimately, legislative improvements that accurately recognize the current climate crisis, prevent future harm, protect and restore communities and areas negatively impacted by existing projects, are required.

POLICY RECOMMENDATIONS

Include bonding and restoration requirements in permit applications for fossil fuel projects.

Require an individual Virginia Water Protection Permit and Uplands Certification under Article 2.6 of the State Water Control Law for all natural gas transmission pipelines 24 inches inside diameter and greater that are subject to § 7c of the Natural Gas Act.

Prohibit new fossil fuel construction in areas of karst terrain.

Blue Ridge Parkway

Photo by Patti Black

PROTECTING OUR WATERS FROM METALS MINING

FOSSIL FUEL & MINING INFRASTRUCTURE

Patrick Fanning // Chesapeake Bay Foundation // PFanning@cbf.org
Stephanie Rinaldi // Friends of Buckingham // rinaldis10@gmail.com
Jessica Sims // Appalachian Voices // jessica@appvoices.org

EXECUTIVE SUMMARY

Mining for gold, copper, zinc, and lead took place in the 19th and early 20th century in Virginia, evidenced by hundreds of abandoned mines along the Gold-Pyrite Belt extending from Fairfax to Halifax Counties.¹ A large-scale version of this toxic industry is now moving forward without a comprehensive regulatory framework nor sufficient financial assurances, putting public health and drinking water at risk.

We must support communities most at risk, protect water resources, and develop an effective regulatory framework at the state level for mining metals.

CHALLENGE

Metal mining is the nation's #1 toxic polluter,² and is a land intensive process which often involves the use of cyanide. The mining procedures can result in perpetual acid mine drainage,³ catastrophic waste containment failures,⁴ the destruction of cultural heritage, and the devastation of local economies as a result of the boom and bust cycle of the metal mining industry.

Mining companies have been prospecting near Virginia's gold-pyrite belt for approximately six years,⁵ announcing "high grade" findings.⁶ This belt contains metals like iron, gold, copper and zinc,⁷ and intersects innumerable Environmental Justice communities often overburdened with existing pollution.^{8,9} It also crosses the James River,¹⁰ which provides drinking water for 2.7 million people, brings millions of dollars into Virginia's economy from commercial fishing, and attracts over 6 million visitors annually.¹¹

Currently, Virginia's mineral mining regulations are not designed to address modern-day industrial base and precious metal mining. Rather, they are focused on the majority of active non-metal mining permits – sand, gravel and stone aggregates.¹²

The gold-pyrite belt crosses the James River, which provides drinking water for 2.7 million people, brings millions of dollars into Virginia's economy from commercial fishing, and attracts over 6 million visitors annually.

As the Commonwealth spends millions to restore the Chesapeake Bay and our Southern Rivers, and reduce nutrient and sediment pollution discharges across the watershed, introduction of a new significant source of pollution – industrial metal mining – threatens the viability of those efforts.

Legislation from the 2021 General Assembly session required the study of the effects of gold mining on the Commonwealth,¹³ but assessment of current regulations' abilities to protect public health, safety and welfare of Virginians from the full suite of metals being explored, including copper, zinc and lead, has not yet occurred.

Additionally, hundreds of historic metal mines lay abandoned across Virginia's landscape.¹⁴ The cost to taxpayers of reclaiming these abandoned sites is a burden and the negative health and environmental impacts of *not* reclaiming these sites is dangerous.¹⁵ We should not add to this problem.

SOLUTION

In order to protect people and the Commonwealth's natural resources, specifically its rivers and streams, Virginia must put in place an effective regulatory framework for mining metals.

To do so, the Commonwealth must seek a broad analysis of existing metal mining regulations – not limited to just one commercial product. Additionally, any workgroup and/or study and review processes must include robust public engagement and education. Economic and

environmental tolls of hardrock mining and reclamation should be part of any evaluations, and should not be overlooked because our current regulatory standards are either non-existent or outdated. The threat of large-scale mining is truly Virginia-wide, and would have both short and long term impacts, so existing bonding, reclamation, closure, and monitoring regulations must be comprehensively evaluated and updated.

While the Commonwealth does its due diligence in reviewing outdated and insufficient regulations, it should also implement a 'pause' on permitting any new metal mining projects. The granting of permits for the mining of gold, copper, lead, or zinc, for example, without sufficient knowledge of project impacts, or with deficient regulatory oversight of impacts is inappropriate given the potential environmental and economic harms.

POLICY RECOMMENDATIONS

Evaluate existing bonding, reclamation, closure, and monitoring regulations to develop a regulatory framework for mining metals that is protective of public health, and our environment.

Pause the issuance of permits for large-scale gold mining until the General Assembly has the time to review the public health and environmental impacts determined by the Department of Energy study on gold mining. *The study must be reported to the General Assembly by December 1, 2022.*

Virginia should study and assess the mining impacts of copper, zinc and lead and pause the issuance of permits until an assessment is complete.

Ban the use of cyanide in any mining process.

Train tracks along the James River

Photo by Patti Black





EXECUTIVE SUMMARIES & CONTACT INFORMATION

CURBING ELECTRIC UTILITIES' POLITICAL INFLUENCE

Virginia's weak campaign finance laws combined with the monopolies granted to Virginia's electric utilities reward these corporations with undeniable influence in shaping energy policy. Dominion Energy, Virginia's largest utility monopoly and largest corporate donor, can give unlimited money directly to the lawmakers in charge of regulating them. This flawed system drowns out the voices of everyday Virginians and opens the door for Dominion Energy to essentially regulate itself. It is time we shift more political power to Virginians by banning political contributions from electric utilities to the very lawmakers responsible for regulating them.

Cassady Craighill // Clean Virginia // cassady@cleanvirginia.org

ENSURING ACCESS TO ESSENTIAL UTILITIES

Access to energy and water utilities is essential for the health and well-being of all Americans. However, clean water and the ability to light, heat, and cool a home are not guaranteed for vulnerable and low-income households in Virginia. We must address inequalities baked into our current system as we respond to the climate crisis and its disparate impacts. By modeling policy approaches taken by other southeastern states, we can protect households from energy and water disconnections. By reducing water and energy burdens for the long-term, we can guarantee access to these vital services and ultimately promote public health.

Laura Gonzalez // Clean Virginia // laura@cleanvirginia.org
Leah Jones // Virginia Interfaith Power & Light // ljones@vaip.org
Joy Loving // Climate Action Alliance of the Valley // jal_1998@yahoo.com
Emily Piontek // Appalachian Voices // emily@appvoices.org

UTILITY ACCOUNTABILITY

VCN POINT OF CONTACT

Narissa Turner // narissa@vcnva.org
Policy & Campaigns Manager - Climate & Energy

CURBING ELECTRIC UTILITIES' POLITICAL INFLUENCE

UTILITY ACCOUNTABILITY

Cassady Craighill // Clean Virginia // cassady@cleanvirginia.org

EXECUTIVE SUMMARY

Virginia's weak campaign finance laws combined with the monopolies granted to Virginia's electric utilities reward these corporations with undeniable influence in shaping energy policy. Dominion Energy, Virginia's largest utility monopoly and largest corporate donor,¹ can give unlimited money directly to the lawmakers in charge of regulating them. This flawed system drowns out the voices of everyday Virginians and opens the door for Dominion Energy to essentially regulate itself. It is time we shift more political power to Virginians by banning political contributions from electric utilities to the very lawmakers responsible for regulating them.

CHALLENGE

Virginia grants investor-owned electric utilities Dominion Energy and Appalachian Power Company a monopoly in their respective service territories. In exchange for a captive customer base, Virginians are entitled to diligent regulation and oversight by the General Assembly. Instead, due to Virginia's abysmal lack of campaign finance and ethics laws, this regulatory contract permits Virginia's utility monopolies to pour millions of dollars into Virginia politics each year, including giving large sums to the chairs of powerful legislative committees. Further, lawmakers can own stock in these corporations and vote on measures that can potentially increase their personal wealth.

Virginia's captive customers have no choice but to subsidize their electricity provider's political spending every time they pay their monthly bills, which are some of the highest in the country.

Virginia's electric utility monopolies alone have donated \$16 million² to Virginia legislators since 1996 to influence public policy in their favor. Utilities often wield the influence and political power these contributions bring against the interests of Virginians. Specifically, Dominion

and Appalachian Power often lobby against more distributed and affordable renewable energy measures like rooftop solar and stronger regulatory oversight from the State Corporation Commission (SCC). As a result, Virginians pay some of the highest energy bills in the nation. Additionally, Virginia's captive customers have no choice but to subsidize their electricity provider's political spending every time they pay their monthly bills, which are some of the highest in the country and place a disproportionate burden on low-income and fixed-income communities.

This severe power imbalance and system of self-regulation makes it difficult, if not impossible, for Virginians to have a meaningful say in energy policies that directly impact them.

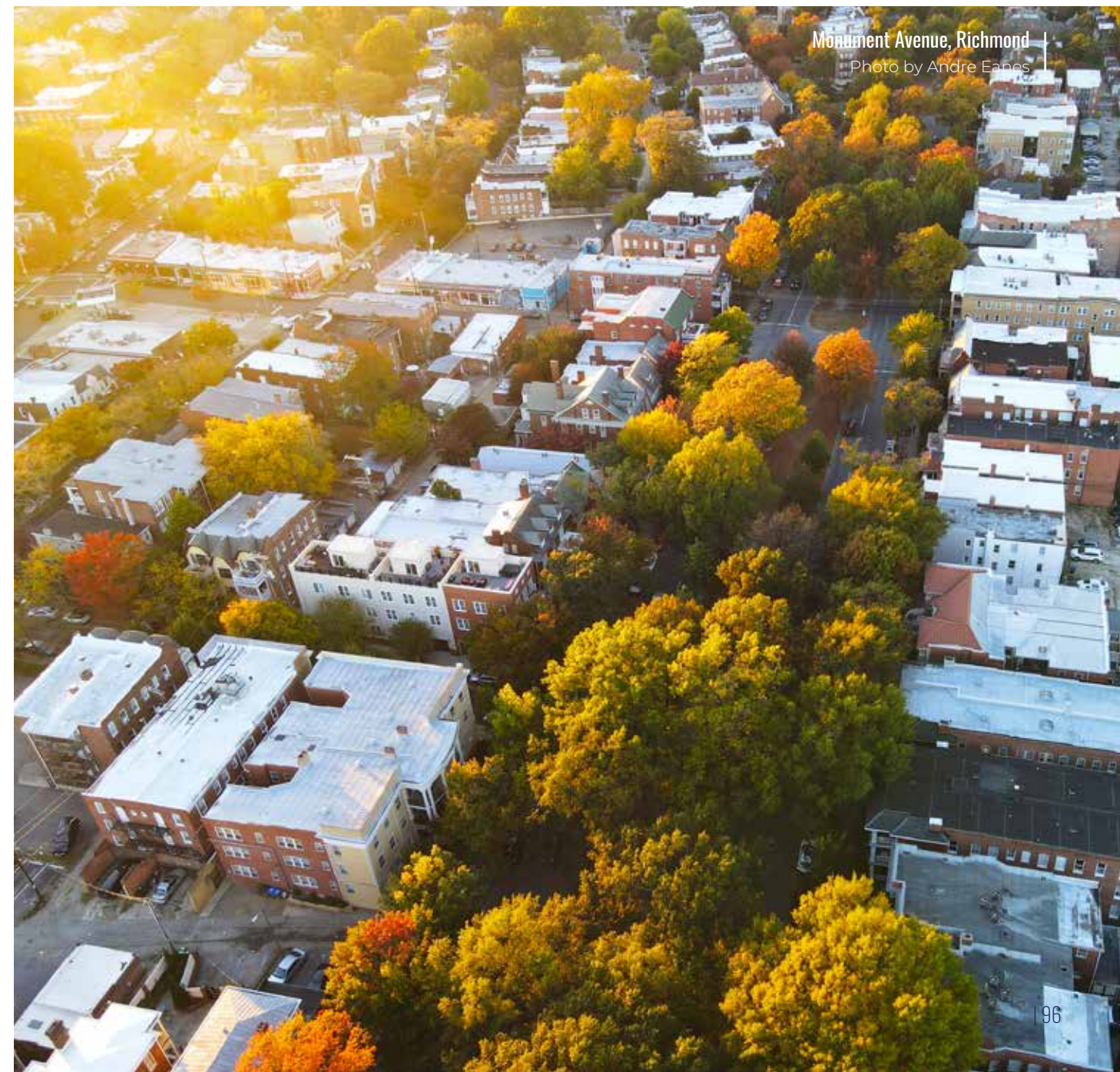
SOLUTION

Virginians would benefit from a more equitable and fair legislative process that ends unjust influence. Over half the country bans these kinds of political contributions in some form, and 22 states ban corporate contributions altogether.³ A simple law prohibiting public utility monopolies from contributing to the political campaigns and committees of lawmakers would help restore balance to Virginians' political power by shrinking the outsized influence of electric utilities on the legislative process. Publicly-regulated utilities include a specific set of corporations in Virginia that provide public services - electricity, gas, water and sewer - and have been granted a monopoly by the state.

POLICY RECOMMENDATIONS

Prohibit public utility monopolies in Virginia from contributing to the political campaigns and committees of the government officials who are tasked with regulating them.

Ban members of the General Assembly from owning stock in any public investor-owned electric utility.



Monument Avenue, Richmond
Photo by Andre Eanes

ENSURING ACCESS TO ESSENTIAL UTILITIES

UTILITY ACCOUNTABILITY

Laura Gonzalez // Clean Virginia // laura@cleanvirginia.org
Leah Jones // Virginia Interfaith Power & Light // ljones@vaip.org
Joy Loving // Climate Action Alliance of the Valley // jal_1998@yahoo.com
Emily Piontek // Appalachian Voices // emily@appvoices.org

EXECUTIVE SUMMARY

Access to energy and water utilities is essential for the health and well-being of all Americans. However, clean water and the ability to light, heat, and cool a home are not guaranteed for vulnerable and low-income households in Virginia. We must address inequalities baked into our current system as we respond to the climate crisis and its disparate impacts. By modeling policy approaches taken by other southeastern states,¹ we can protect households from energy and water disconnections. By reducing water and energy burdens for the long-term, we can guarantee access to these vital services and ultimately promote public health.²

CHALLENGE

Virginia has 33 electric utilities, 8 gas utilities, and more than 50 water and wastewater utilities, each with its own consumer protections and disparate regulatory oversight. Some utilities are regulated by the State Corporation Commission and others by municipal governments. While this regulatory structure provides utilities the flexibility to serve unique needs of customers within a given service area, it also means that vulnerable low-income households are unfairly subject to differing consumer protection policies.

Enduring legacies of structural racism mean that energy burdens are also disproportionately felt by households of color. For example, Black and Brown households were more likely to lose power during the pandemic than white households.³ Finally, the 2021 Virginia General Assembly passed a resolution to recognize water as a human right. Though this resolution recognizes that water disconnections are “contrary to promoting public health and welfare,” there are no binding policies that specifically ensure water access.⁴

Virginians face high energy burdens: more than 3 in 4 households spend more than 6% of their monthly income on energy bills.

Virginia residents:

- Face high energy burdens - 75% of Virginia households spend more than 6% of their monthly income on energy bills.⁵
- Have some of the least consumer-friendly disconnection policies of any state in the Southeast.⁶
- Pay some of the highest electric bills in the nation.⁷

Fueled by inflation and the war in Ukraine, energy prices have skyrocketed to levels not seen since the oil crisis of the 1980s. Exacerbation of existing burdens increases a household's vulnerability to interruptions in access to these essential services, and can mean choosing between paying the power bill or other necessities (food, rent, medical care).

SOLUTION

Affordability and access can be addressed through short and long term approaches, many of which have been successfully implemented in other states, including:

- Weather-based disconnection policies,⁹
- Low-income energy efficiency and solar programs,
- Low-income rates, and
- Debt management plans.

After the Illinois Citizen Utility Board found that low-income customers use less on-peak energy than the average customer, and thus pay more to the utility than the cost of the power they use,¹⁰ Illinois directed the Public Utility Commission to explore discounted rates for low-income gas and electric customers.¹¹ Ohio, Pennsylvania, and Illinois enroll income-qualifying customers in a Percentage of Income Payment Plan (PIPP). PIPP is a long-term payment plan that sets caps on customer bills, and can include debt forgiveness and energy conservation incentives. Virginia's 2020 Clean Economy Act mandated that the state's two largest investor-owned electric

companies implement PIPPs (though the requirement was not expanded to electric cooperatives and municipal utilities). And many states are developing new clean energy programs targeted to low-income households.¹²

Virginia should standardize disconnection policies across all utility service areas; limit the financial consequences for late payments, non-payments, or disconnections and reconnections; and establish payment programs, new rate structures, and clean energy programs that bring stability and certainty to vulnerable low-income households. These policies are especially important given the expiration of Covid-19 disconnection moratoria and assistance programs. Ultimately, by addressing the overall burden that many households face in accessing these essential utilities, we can help ensure that energy and water services are affordable for more people.¹³

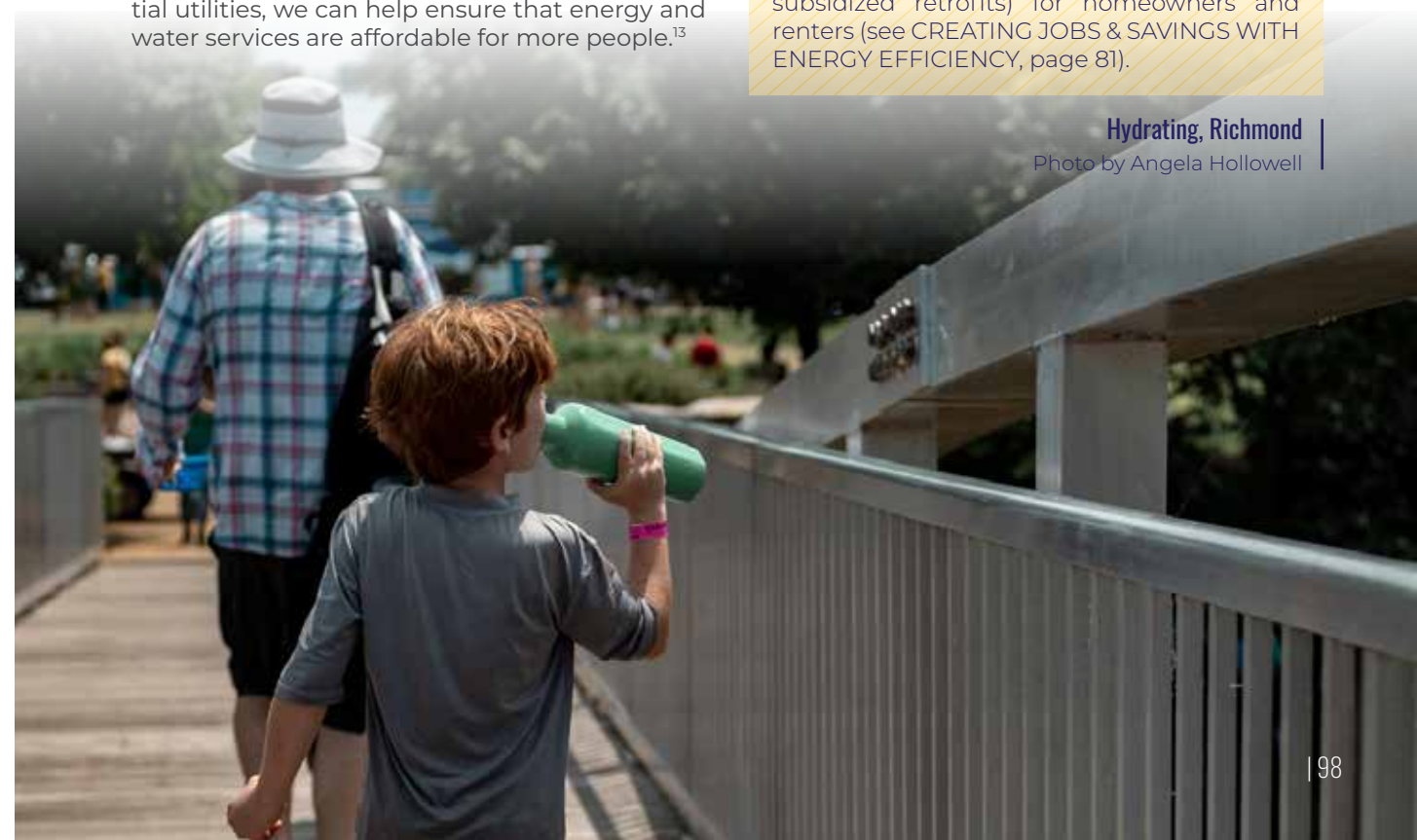
POLICY RECOMMENDATIONS

Establish utility disconnection policies for extreme weather, public health emergencies and when vulnerable residents (e.g., medically compromised, infants) are at risk; require disconnections data be reported to the SCC; and limit fees resulting from overdue bills.

Require unregulated utilities to offer low-income payment plans that do not involve deposits, penalties (e.g., late fees, interest) or eligibility criteria (e.g., credit ratings).

Reform electric rate structures (see *ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION*, page 83) and support energy efficiency measures (including subsidized retrofits) for homeowners and renters (see *CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY*, page 81).

Hydrating, Richmond
Photo by Angela Hollowell



GOOD GOVERNANCE

None of the conservation efforts detailed in *Our Common Agenda* can be realized without an equitable and inclusive government. Policies and programs must represent and benefit all Virginians and should not cause disproportionate harm to low-income communities and communities of color, core programs and agencies should be fully staffed and funded, people - not utilities - should have a voice in the halls of Richmond, and students should be afforded the opportunity to experience the outdoors.

ENVIRONMENTAL EQUITY SUMMARIES & CONTACT INFORMATION	101
PROMOTING ENVIRONMENTAL JUSTICE.....	103
EDUCATING FOR ENVIRONMENTAL LITERACY.....	105
CONSERVATION FUNDING SUMMARIES & CONTACT INFORMATION	107
WATER, LAND, & WILDLIFE CONSERVATION BUDGET REQUESTS.....	109
TRANSPORTATION & CLIMATE BUDGET REQUESTS.....	111



ENVIRONMENTAL EQUITY

EXECUTIVE SUMMARIES & CONTACT INFORMATION

PROMOTING ENVIRONMENTAL JUSTICE

Historically, the burdens of pollution have disproportionately affected communities of color and low-income communities. These communities have borne the brunt of environmental harms from energy, industrial, and agricultural development while others have enjoyed the economic gains. The impacts of climate change only exacerbate this disparity.

While Virginia in recent years has taken initial steps to promote environmental justice, there is more work to be done—developing agency policy and engaging communities in environmental permitting—to ensure that the benefits and burdens of economic development and environmental protection are equitably distributed across all communities in the Commonwealth.

Peter Anderson // Appalachian Voices // peter@appvoices.org

Jay Ford // Chesapeake Bay Foundation // jford@cbf.org

Faith Harris // Virginia Interfaith Power & Light // fharris@vaip.org

Mark Sabath // Southern Environmental Law Center // msabath@selcva.org

EDUCATING FOR ENVIRONMENTAL LITERACY

A challenge we face today is creating a shared understanding of the natural resources that exist in Virginia and how to best protect and conserve them. In order to create an environmentally literate Commonwealth, we need to prepare our teachers to effectively teach environmental concepts.

Daria Christian // Friends of the Rappahannock // education@riverfriends.org

Christy Everett // Chesapeake Bay Foundation // ceverett@cbf.org

Helen Kuhns // Lynnhaven River Now // helen@LRN.org

VCN POINT OF CONTACT

Narissa Turner // narissa@vcnva.org
Policy & Campaigns Manager - Climate & Energy

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

PROMOTING ENVIRONMENTAL JUSTICE

ENVIRONMENTAL EQUITY

Peter Anderson // Appalachian Voices // peter@appvoices.org
Jay Ford // Chesapeake Bay Foundation // jford@cbf.org
Faith Harris // Virginia Interfaith Power & Light // fharris@vaipl.org
Mark Sabath // Southern Environmental Law Center // msabath@selcva.org

EXECUTIVE SUMMARY

Historically, the burdens of pollution have disproportionately affected communities of color and low-income communities. These communities have borne the brunt of environmental harms from energy, industrial, and agricultural development while others have enjoyed the economic gains. The impacts of climate change only exacerbate this disparity.

While Virginia in recent years has taken initial steps to promote environmental justice, there is more work to be done—developing agency policy and engaging communities in environmental permitting—to ensure that the benefits and burdens of economic development and environmental protection are equitably distributed across all communities in the Commonwealth.

CHALLENGE

In Virginia and throughout the nation, people of color and low-income individuals are more likely to live near polluting facilities and other environmental hazards,¹ posing disproportionate risks to their health and well-being. Addressing these inequities, and ensuring that people have equal access to and influence over environmental decisions that affect them, are at the heart of environmental justice, which Virginia defines as “the fair treatment and meaningful involvement of every person, regardless of race, color, national origin, income, faith, or disability, regarding the development, implementation, or enforcement of any environmental law, regulation, or policy.”²

Recent years have witnessed some progress for environmental justice. The passage of the Virginia Environmental Justice Act in 2020 enshrined environmental justice as the official policy of the Commonwealth.³ In 2021, the State Air Pollution Control Board denied an air permit for a gas-fired compressor station in Pittsylvania County, finding

that the facility’s emissions would unfairly burden an African American community.⁴ And in 2022, the James River Water Authority abandoned its effort to build a raw water intake on a sacred Monacan heritage site.⁵

Virginia’s environmental and health burdens continue to be borne disproportionately by those with the least political and economic power.

Regrettably, however, these victories have been the exception, not the norm. In 2022, the General Assembly significantly eroded meaningful involvement by removing permitting authority from Virginia’s citizen boards, whose volunteer members had for years brought their real-world perspectives to make important permitting decisions in full public view. And Virginia’s environmental and health burdens continue to be borne disproportionately by those with the least political and economic power. A mega-landfill proposed for Cumberland County would sit adjacent to the Pine Grove Elementary School, a historic African American schoolhouse.⁶ An existing landfill in Bristol is plaguing local residents with noxious gases.⁷ A planned gas pipeline project would expose neighbors of a Prince George County compressor station to increased air pollution,⁸ while a proposed gold mine could threaten water quality across central Virginia.⁹ The hard work of striving for environmental justice in Virginia has only just begun.

SOLUTION

Actions taken by state agencies have an outside effect on Virginia’s environmental justice communities. For the benefit of the public and the agencies themselves, agencies should clearly identify how they plan to ensure that environmental justice is carried out in the course of their permitting actions and other activities.

Each state agency whose actions impact public health or the environment should be required to develop and implement an official environmental justice policy. The policy should include methods for identifying environmental justice communities, a robust public participation plan to engage communities in agency decision-making, and a process for considering the potential effects the agency’s activities have on environmental justice communities.

The environmental permitting process deserves special focus. All too often, affected community members have learned about a proposed project too late to provide input that can influence the final decision. Effective public outreach from the outset makes the permitting process more inclusive—and more efficient, by incorporating the perspectives of affected communities before the final permitting decision is made. By considering whether the issuance of a permit will specifically burden a community of color or low-income community, regulators can start to address the historic pattern of siting multiple pollution sources in the same communities. And in light of the recent removal of the citizen boards’ permitting authority, it is critical that Virginia uphold and strengthen its existing protections for community participation in environmental decision-making.

POLICY RECOMMENDATIONS

Require appropriate agencies within the Secretariats of Natural and Historic Resources, Transportation, Commerce and Trade, and Health and Human Resources to develop and implement an official environmental justice policy.

Require agencies to consult with members of affected communities early in environmental permitting and to provide them with meaningful involvement throughout the permitting process, through pre-application notice, public meetings, and communication using methods tailored to the affected communities.

Ensure that agencies consider whether their issuance of an environmental permit would cause disproportionate adverse impacts on a community of color or low-income community, and empower them to require alternative sites or deny permits where appropriate.

Maintain the integrity and independence of the Virginia Environmental Justice Council.



Richmond Capitol Building
Photo provided by VCN

EDUCATING FOR ENVIRONMENTAL LITERACY

ENVIRONMENTAL EQUITY

Daria Christian // Friends of the Rappahannock // education@riverfriends.org
Christy Everett // Chesapeake Bay Foundation // ceverett@cbf.org
Helen Kuhns // Lynnhaven River Now // helen@LRNow.org

EXECUTIVE SUMMARY

A challenge we face today is creating a shared understanding of the natural resources that exist in Virginia and how to best protect and conserve them. In order to create an environmentally literate Commonwealth, we need to prepare our teachers to effectively teach environmental concepts.

CHALLENGE

As a Commonwealth, we are facing pressing environmental challenges. To respond to these challenges, Virginia needs an engaged citizenry equipped with the knowledge and motivation

to conserve our natural resources and protect our public health. Virginia's next generation of environmental engineers and stewards begins with meaningful environmental education. Of the *21st Century Skills* students will need to find success in their future careers, environmental and conservation literacy are called out specifically.¹

Virginia's next generation of environmental engineers and stewards begins with meaningful environmental education.

Many schools, especially those that are traditionally under-represented and underserved,

struggle to incorporate environmental education as a regular and meaningful part of their curriculum. Many teachers are ill-prepared to lead lessons about the environment. This is partially because they were not necessarily taught about the environment when they were in school, and there is not a significant focus on this topic in teacher preparatory programs.²

SOLUTION

In order to prepare our classroom teachers and teachers-in-training to effectively teach the environmental literacy concepts already woven into the Virginia Standards of Learning, we need to offer a quality program to ensure competency in this environmental education. Virginia Association for Environmental Education (VAEE) offers a certificate program that is aligned with the North American Association for Environmental Education's standards. Although this program was developed with input from the Virginia Department of Education, there is no formal incentive for teachers to complete this or other pre-service environmental education learning opportunities. We propose investigating incentives for teachers to complete the certification, including adding an endorsement to their licensure, providing scholarship funds to pay for the costs of the certificate, and providing a pay scale increase upon successful completion.

POLICY RECOMMENDATIONS

Create a study through the Department of Conservation and Recreation, Department of Education, and the State Council of Higher Education for Virginia to look at all the possibilities for incentivizing teacher engagement in Virginia-centric environmental education certifications, including the VAEE certificate program. The study will emphasize looking at ways to engage underserved school districts.

Education program on the Rappahannock River

Photo by Lis Hera



Rosemont students gardening
Photo by Lynnhaven River NOW

INVESTING IN CLEAN AIR, CLEAN WATER, & HEALTHY LANDS

Anna Killius // James River Association // akillius@thejamesriver.org
Zachary Sheldon // The Nature Conservancy // zachary.sheldon@tnc.org

EXECUTIVE SUMMARY

From the treasured Chesapeake to the majestic Appalachian Ridge, with the fertile Coastal Plain and Piedmont between, Virginia's natural resources sustain thriving communities. But these resources -- still recovering from decades of pollution -- face the extraordinary task of withstanding climate change while meeting the needs of Virginians. Fortunately, many of the actions we take to restore our waterways and revive our natural landscapes will reduce carbon pollution and help mitigate some of the worst impacts of climate change: rising temperatures and rising water. Strong, reliable investments to restore our natural resources will ensure that Virginians emerge healthy and whole from the challenges ahead.

CHALLENGE

After decades of unchecked pollution and chronic underfunding, Virginia's natural resources are on the road to recovery thanks to

our shared commitments to restoring clean air, clean water, and healthy landscapes throughout the Commonwealth. But the urgency of these commitments is only growing. With only four years remaining to meet our 2025 Bay cleanup goals, we must significantly pick up the pace of our progress to reach our required pollution reductions on time. Climate change continues to threaten our work and our well-being, with heavier and more frequent downpours overwhelming stormwater systems, flooding neighborhoods, and sending more pollution downstream. And despite our constitutional duty "to protect [our] atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth,"¹ we know that environmental justice communities have not benefited from our environmental protections. There is much work to be done to ensure that all Virginians "receive fair treatment and meaningful involvement regarding the development,

implementation, or enforcement of any environmental law, regulation, or policy."²

SOLUTION

To meet our natural resource commitments, Virginia lawmakers have developed many effective programs and initiatives to ensure state investments wisely support our natural resources and our communities and people. Notable examples include the Virginia Agricultural Cost-Share Program, the Stormwater Local Assistance Fund, the Water Quality Improvement Fund, the Virginia Land Conservation Foundation, and the Land Preservation Tax Credit program. Thankfully, we know that the natural resources programs we have spent decades developing and implementing will also help us remain resilient in the face of climate change.

Recent studies have shown that each dollar spent on agricultural conservation practices, and each dollar spent on land conservation, leads to a return of \$4. Outdoor recreation in Virginia

supports 197,000 direct jobs and over \$1 billion in state and local tax revenue. Virginia's state parks and natural areas alone support 10 million annual visits, generating \$267 million in positive economic impact and supporting over 3,800 jobs. And infrastructure projects that protect water quality, like upgrading wastewater treatment plants or installing stormwater management structures, create local jobs.

POLICY RECOMMENDATIONS

By fully funding Virginia's natural resources programs and the agencies that manage them, we can make significant progress toward our pressing commitments to restored waterways, healthier landscapes, and resilient communities. To that end, Virginia's lawmakers should ensure that all state conservation agencies have the staff and resources necessary to execute their mission and consider the following specific funding needs identified throughout *Our Common Agenda* and outlined on the following pages, pg 109–112.

Skyline Drive, Shenandoah National Park |

Photo by Paul-Michael Ferguson

CONSERVATION FUNDING

VCN POINTS OF CONTACT

Pat Calvert // pat@vcnva.org
Senior Policy & Campaigns Manager - Land Conservation & Clean Water

Narissa Turner // narissa@vcnva.org
Policy & Campaigns Manager - Climate & Energy

Wyatt Gordon // wyatt@vcnva.org
Policy & Campaigns Manager - Land Use & Transportation

CLEAN WATER

- \$80M per year for the Stormwater Local Assistance Fund (pg 6).
- \$2M per year for the Virginia Conservation Assistance Program (pg 6).
- Maintain full funding, no less than \$256M over the biennium, for the Virginia Agricultural Cost-Share Program (pg 8).
- Provide sufficient and stable funding for technical assistance by Soil and Water Conservation Districts (pg 8).
- Support additional financial incentives for long-term agricultural conservation practices like stream exclusion fencing and riparian buffers (pg 8).
- Fully fund state grants for wastewater treatment upgrades to fulfill the requirements of the Enhanced Nutrient Reduction Certainty Program, as identified by the Needs Assessment, and cost-effectively reduce pollution to Virginia's waterways. (pg 10).
- Maintain state funding to localities remediating aging combined sewer systems (pg 10).
- Fund a comprehensive Albemarle-Pamlico watershed study by DEQ (pg 12).
- \$3M for the Virginia Abandoned and Derelict Vessel Prevention and Removal Program (pg 12 & 16).

PLASTIC & TOXIC WASTE

- Ban the use of single-use expanded polystyrene by food vendors by 2024 rather than having a 7-year phase-out period (pg 16).
- Fund DEQ and the Virginia Department of Health to identify and eliminate potential pathways for PFAS contamination (pg 20).

FLOOD & CLIMATE RESILIENCY

- Identify additional consistent, long-term, and dedicated funding to address flood risk and advance flood resilience (pg 24).
- Increase staff capacity at multiple agencies (including at least 2 outreach and engagement staff at DCR, 2 Chesapeake Bay Preservation Act technical assistance staff at DEQ, and 1 Tidal Wetlands Act technical assistance staff at VMRC) to educate localities and relevant boards on changing regulations and provide direct technical assistance to local and regional governments for flood resilience planning and adaptation (pg 24).

Layers of Blue

Photo by Victoria Kennedy

LAND CONSERVATION & OUTDOOR RECREATION

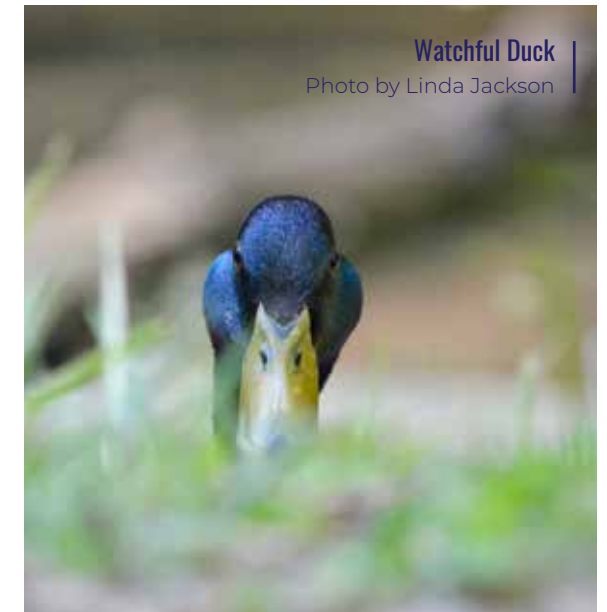
- Maintain the Land Preservation Tax Credit (pg 32).
- \$20M per year for the Virginia Land Conservation Foundation with \$2 million set aside for farmland preservation (pg 32, 36, & 38).
- \$5M per year for the Virginia Farmland Preservation Fund (pg 32, 36, & 38).
- \$5M per year for the Virginia Battlefield Preservation Fund (pg 32).
- \$5M per year for the Virginia Black Indigenous and People of Color Historic Preservation Fund (pg 32 & 38).
- \$20M per year to extend the Virginia's Outdoors Foundation's Get Outdoors Program statewide (pg 32).
- \$41M per year to support the Office of Trails for the planning, construction and maintenance of trails (pg 33 & 68).
- \$1M in grant match funds through the Virginia Department of Transportation (VDOT) for low-income communities, communities of color, and localities with a population less than 25,000 to enhance connectivity to transportation and recreation opportunities (pg 33).
- \$57M per year to DCR to support essential staffing, programs, and maintenance backlog at state parks (pg 33).
- \$1M in matching funds for federal agricultural and conservation easement programs (pg 36).
- \$500,000 per year through the Office of Farmland Preservation to provide assistance for Purchase of Development Rights ordinances and farmland preservation zoning practices for localities (pg 36).
- \$10M in federal recovery funding to establish a small meat processing fund (pg 36).
- \$250,000 per year for the Agriculture and Forestry Industries Development Fund infrastructure program and \$250,000 per year for a new Virginia Department of Agriculture and Consumer Science program providing technical and grant assistance to small and underserved farms transitioning to higher value production (pg 36).

VIRGINIA'S FLORA & FAUNA

- \$4M per year to the Virginia Department of Forestry for the Trees for Clean Water program and \$3 million per year for Urban and Community Forestry grants, with 25% of funds prioritized for low-income communities (pg 44 & 62).
- One additional full time equivalent position to support the development and advancement of Virginia's Wildlife Corridor Action Plan and \$5M in fiscal year 2024 to support wildlife crossings and habitat connectivity projects (pg 46).
- Hire at least one FTE to develop and advance the Wildlife Corridor Action Plan (pg 46).
- \$5M to begin renovation and expansion of the Aquatic Wildlife Conservation Center at Buller Fish Hatchery (pg 50).
- \$2M to increase mussel restoration projects at hatcheries across the Commonwealth (pg 50).
- Fund a 3-year pilot program through VMRC for crab pot tagging (pg 52).
- Provide funding for a comprehensive blue crab stock assessment (pg 52).

Watchful Duck

Photo by Linda Jackson



LAND USE & TRANSPORTATION

LAND USE & TRANSPORTATION REFORM

- Increase share of state and regional funding for transit, rail, bicycle and pedestrian infrastructure to 50% by 2030 (pg 58).
- Prioritize funding for the repair of existing infrastructure, and fully fund the replacement of all roads, bridges, water and sewer infrastructure, schools, and other public buildings in poor condition over 10 years (pg 58 & 60).
- \$200M per year for the state Affordable Housing Trust Fund (pg 60).
- \$100M per year for financial incentives to expand access to electrified mobility— including electric vehicles, bikes, school and transit buses—until price parity is achieved (pg 62 & 64).

WALKING, BIKING, RAIL, & PUBLIC TRANSIT

- \$10M per year for the Transit Ridership Incentive Program (pg 70 & 72).
- Increase transit funding to meet the needs identified in DRPT's 2022 Transit Modernization and Equity Study (pg 70 & 72).

CLIMATE & ENERGY

RENEWABLE ENERGY & ENERGY EFFICIENCY

- Create and fund a new grant program to assist school divisions with achieving net-zero carbon pollution standards on new and substantially renovated school buildings (pg 80).
- Fund a study by the State Corporation Commission and Virginia Energy considering alter-

natives to the existing electric utility regulatory system, such as those that compensate utility investments based on environmental and social outcomes rather than a project's price tag (pg 84).

- \$35M per year for the Virginia Brownfield and Coal Mine Renewable Energy Grant Program (pg 86).

GOOD GOVERNANCE

- Fund a study through the Department of Conservation and Recreation (DCR) of ways to incentivize teacher engagement in Virginia-centric environmental education certifications (pg 106).

White Cliffs, Bull Run Mountain |

Photo by Hugh Kenny

ENDNOTES

CLEANING UP POLLUTED STORMWATER RUNOFF

- ¹ "Assault on Clean Water Threatens Virginia," Southern Environmental Law Center (July 12, 2022). https://www.southernenvironment.org/uploads/petitions/VA_CWDL_Factsheet_0319_F.pdf.
- ² "About Virginia Seafood," Virginia Seafood (2020). <http://www.virginiaseafood.org/about-virginia-seafood>.
- ³ "Virginia," Outdoor Industry Foundation (July 12, 2022). <https://outdoorindustry.org/state/virginia>.
- ⁴ "Stormwater Runoff," Chesapeake Bay Program (2020). https://www.chesapeakebay.net/issues/stormwater_runoff.
- ⁵ "Stormwater Local Assistance Fund," Va. Department of Environmental Quality (2022). <https://www.deq.virginia.gov/water/clean-water-financing/stormwater-local-assistance-fund-slaf>.

WORKING WITH FARMERS TO PROTECT LOCAL WATERS

- ¹ "2025 Watershed Implementation Plans (WIPs)," Chesapeake Progress (2020). <https://www.chesapeakeprogress.com/clean-water/watershed-implementation-plans>.
- ² VA Code §62.1-44.119.
- ³ Ralph Northam and Matthew Strickler. "Chesapeake Bay TMDL Phase III Watershed Implementation Plan," Virginia Department of Environmental Quality (July 1, 2021). <https://www.deq.virginia.gov/home/showpublisheddocument/4481/637469262077670000>.
- ⁴ "Virginia's Agricultural Cost Share Manual," (May, 2022). <http://consapps.dcr.virginia.gov/htdocs/agbpmplan/agbpmptoc.htm>.
- ⁵ "FY 2021 Chesapeake Bay and Virginia Waters Clean-Up Plan," Virginia LIS (Nov, 2021). <https://rga.lis.virginia.gov/Published/2022/RD85>.
- ⁶ R. Zeckoski et al., "Streamside Livestock Exclusion: A Tool for Increasing Farm Income and Improving Water Quality," Virginia Tech (Dec, 2012). https://vttechworks.lib.vt.edu/bitstream/handle/10919/48073/442-766_pdf.pdf.
- ⁷ Marcio Renato Nunes et al., "No-till and Cropping System Diversification Improve Soil Health and Crop Yield," *Geoderma* 328, (October 2018): 30. <https://doi.org/10.1016/j.geoderma.2018.04.031>.
- ⁸ "Virginia Soil and Water Conservation Board Electronic Meeting Minutes," (May 20, 2021): 10-11, https://townhall.virginia.gov/GetFile.cfm?File=Meeting\116\32195\Minutes_DCR_32195_v1.pdf.

INVESTING IN WASTEWATER INFRASTRUCTURE NEEDS

- ¹ Secretary of Natural Resources, "FY 2021 Chesapeake Bay and Virginia Waters Clean-up Plan," (November 2021). <https://rga.lis.virginia.gov/Published/2021/RD682/PDF>.
- ² "Diseases Involving Sewage," Indiana Department of Health (2022). <https://www.in.gov/health/eph/onsite-sewage-systems-program/diseases-involving-sewage>.
- ³ "Richmond, VA," Data USA (June 10, 2022). <https://datausa.io/profile/geo/richmond-va>.
- ⁴ Water, Health, and Equity: Infrastructure Crisis Facing Low-Income Communities & Communities of Color -- and How to Solve It," Clean Water for All, https://www.policylink.org/sites/default/files/CWC_Report_Full_report_lowres.pdf.
- ⁵ "WaterWorks: The Job Creation Potential of Repairing America's Water Infrastructure," BlueGreen Alliance, <https://www.bluegreenalliance.org/wp-content/uploads/2020/07/BGA-Water-Works-Report-vFINAL.pdf>.
- ⁶ Va. Code § 62.1-223.3.
- ⁷ Secretary of Natural Resources, "Clean-up Plan."
- ⁸ Sarah Vogel song, "Push to accelerate Richmond combined sewer fix halted in House," Virginia Mercury (March 2, 2022). <https://www.virginiamercury.com/2022/03/02/push-to-accelerate-richmond-combined-sewer-fix-halted-in-house>.

PROTECTING THE ALBEMARLE-PAMLICO WATERSHED

- ¹ "Climate Change Indicators: Heavy Precipitation." US EPA (April, 2021). <https://www.epa.gov/climate-indicators/climate-change-indicators-heavy-precipitation>.
- ² "Memorandum of Understanding," (August 31, 2020). <https://www.dcr.virginia.gov/natural-heritage/document/2020-APNEP-MOU.pdf>.

REDUCING PLASTIC POLLUTION

- ¹ "Advancing Sustainable Materials Management: 2016 and 2017 Tables and Figures, Tables 1-4," U.S. EPA (November 2019). https://www.epa.gov/sites/default/files/2019-11/documents/2016_and_2017_facts_and_figures_data_tables_0.pdf.
- ² Ken Christensen. "Guess What's Showing Up in Our Shellfish? One Word: Plastics." National Public Radio (September 19, 2017). <https://www.npr.org/sections/thesalt/2017/09/19/551261222/guess-whats-showing-up-in-our-shellfish-one-word-plastics>.
- ³ "2021-2025 Virginia Marine Debris Reduction Plan," Virginia Coastal Zone Management Program (2021). <https://www.deq.virginia.gov/coasts/marine-debris>.
- ⁴ "Data from the 2019 International Coastal Cleanup in Virginia," Clean Virginia Waterways of Longwood University, <http://www.longwood.edu/cleanva/Data.ICCinVA.html>.
- ⁵ "Neglected: Environmental Justice Impacts of Marine Litter and Plastic Pollution," United Nations Environment Programme (April, 2021). <https://wedocs.unep.org/bitstream/handle/20.500.11822/35417/EJIPP.pdf>.
- ⁶ Hale, Robert C., Meredith E. Seeley, Mark J. La Guardia, Lei Mai, and Eddy Y. Zeng. "A global perspective on microplastics." *Journal of Geophysical Research: Oceans* 125, no. 1 (2020): e2018JC014719.
- ⁷ "Marine Litter Report: Littered Bottles & Cans: Higher in Virginia Than in States with Bottle Bills," Clean Virginia Waterways (2020). <http://www.longwood.edu/cleanva/publications.html>.
- ⁸ Schuyler, Q., B. Hardesty, T. Lawson, K. Opie & C Wilcox. "Economic incentives reduce plastic inputs to the ocean." *Marine Policy*, 96, 250-255. (2018). <https://www.sciencedirect.com/science/article/abs/pii/S0308597X17305377>.
- ⁹ Based on 2020 data from Tennessee, Nebraska, and Washington Departments of Revenue.

STOPPING CHEMICAL, PLASTICS, & FOSSIL FUEL INDUSTRY GREENWASHING

- ¹ Patel, D., et al., "All Talk and No Recycling: An Investigation of the U.S. "Chemical Recycling" Industry," Global Alliance for Incinerator Alternatives (2020). https://www.no-burn.org/wp-content/uploads/All-Talk-and-No-Recycling_July-28.pdf.
- ² Sarah Vogel song, "Lawmakers are considering adding 'advanced recycling' to state code. So what exactly is it?" Virginia Mercury (2021). <https://tinyurl.com/j3a7zs75>.
- ³ Robert D. Bullard and Beverly Hendrix Wright, "The Politics of Pollution: Implications for the Black Community." *Phylon* 47, no. 1 (1986): 71-78. <https://doi.org/10.2307/274696>.
- ⁴ Di, Q., Wang, Y., Zanobetti, A., Wang, Y., Koutrakis, P., Choirat, C., Dominici, F., Schwartz, J., "Air Pollution and Mortality in the Medicare Population". *New England Journal of Medicine* 372 no. 26 (2017): 2513-2522. <https://doi.org/10.1056/NEJMoal702747>.
- ⁵ "Recycling Lies: "Chemical Recycling" Of Plastic Is Just Greenwashing Incineration," NRDC (2022). <https://www.nrdc.org/sites/default/files/chemical-recycling-greenwashing-incineration-ib.pdf>.
- ⁶ Cheryl Hogue, "Chemical recycling of plastic gets a boost in 18 US states – but environmentalists question whether it really is recycling," Chemical and Engineering News (2022). <https://tinyurl.com/35m27tc7>.
- ⁷ Patel, "All Talk and No Recycling."

TACKLING TOXIC POLLUTANTS

- 1 "Toxicological Profile for Perfluoroalkyls," Agency for Toxic Substances and Disease Registry (May 2021) <https://www.atsdr.cdc.gov/ToxProfiles/tp200.pdf>.
- 2 Arlene Blum, Simona A. Balan, Martin Scheringer, Xenia Trier, Gretta Goldenman, Ian T. Cousins, Miriam Diamond, et al, "The Madrid Statement on Poly and Perfluoroalkyl Substances (PFASs)," *Environmental Health Perspectives* 123 no. 5 (May 1, 2015). <https://doi.org/10.1289/ehp.1509934>.
- 3 "Toxicological Profile for Perfluoroalkyls."
- 4 "Our Current Understanding of the Human Health and Environmental Risks of PFAS," US EPA (October 14, 2021). <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.
- 5 "Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary," Virginia Department of Health (September 30, 2021) <https://www.vdh.virginia.gov/content/uploads/sites/14/2021/09/VA-PFAS-Sample-Study-Summary.pdf>.
- 6 "Henrico County finishes private well testing for potentially harmful chemicals," NBC12 (March 5, 2022). <https://www.nbc12.com/2022/03/05/henrico-county-finishes-private-well-testing-potentially-harmful-chemicals>.
- 7 "Elevated PFAS Levels Found in the Chickahominy River Watershed," Virginia Department of Health (October 28, 2021). <https://www.vdh.virginia.gov/news/elevated-pfas-levels-found-in-the-chickahominy-river-watershed>.
- 8 Genna Reed, "PFAS Contamination Is an Equity Issue, and President Trump's EPA is Failing to Fix It," Union of Concerned Scientists (October 30, 2019). <https://blog.ucsusa.org/genna-reed/pfas-contamination-is-an-equity-issue-president-trumps-epa-is-failing-to-fix-it>.
- 9 "Coal-Tar-Based Pavement Sealcoat—Potential Concerns for Human Health and Aquatic Life," USGS, <https://pubs.usgs.gov/fs/2016/3017/fs20163017.pdf>.
- 10 Richard V. Lacouture, et al., "Susceptibility of eastern oyster early life stages to road surface polycyclic aromatic hydrocarbons (PAHs)," Repository & Open Science Access Portal (June 1, 2012). <https://rosap.nrl.bts.gov/view/doi/24488>.
- 11 "Understanding the Influence of Multiple Pollutant Stressors on the Decline of Freshwater Mussels in a Biodiversity Hotspot," *Science of The Total Environment* 773 (June 15, 2021): <https://doi.org/10.1016/j.scitotenv.2020.144757>.
- 12 Peter C Van Metre, Barbara J Mahler, "PAH concentrations in lake sediment decline following ban on coal-tar-based pavement sealants in Austin, Texas," *Environ Sci Technol* 48 no. 13 (July 1, 2014): <https://pubmed.ncbi.nlm.nih.gov/24930435>.
- 13 "Alternatives for coal tar sealants," Minnesota Stormwater Manual, https://stormwater.pca.state.mn.us/index.php/Alternatives_for_coal_tar_sealants.

ADDRESSING STATEWIDE FLOOD RISK EQUITABLY

- 1 Tal Ezer & Larry P. Atkinson, "Sea Level Rise in Virginia – Causes, Effects and Response," *Virginia Journal of Science* 66 no. 3 (Fall 2015): 355. <https://digitalcommons.odu.edu/vjs/vol66/iss3/8>.
- 2 "Virginia Coastal Resilience Master Plan," Virginia Department of Conservation and Recreation (December 2021). <https://www.dcr.virginia.gov/crmp/plan>.
- 3 "Virginia Coastal Resilience Master Plan."
- 4 "Community Flood Preparedness Fund Grants and Loans," Virginia Department of Conservation and Recreation (April 10, 2022). <https://www.dcr.virginia.gov/dam-safety-and-floodplains/dsfpm-cfpf>.

SEQUESTERING CARBON THROUGH OUR NATURAL RESOURCES

- 1 "Global Warming of 1.5°C," Intergovernmental Panel on Climate Change (2019). https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_LR.pdf.
- 2 "Chesapeake Bay TMDL Phase III Watershed Implementation Plan," Virginia Department of Environmental Quality (August 23, 2019). <https://www.deq.virginia.gov/home/showpublisheddocument/4481/637469262077670000>.
- 3 "Virginia Coastal Resilience Master Plan," Virginia Department of Conservation and Recreation (December 2021). <https://www.dcr.virginia.gov/crmp/plan>.
- 4 "Natural Carbon Sequestration in the Commonwealth," January 2022, <https://rga.lis.virginia.gov/Published/2022/RD77/PDF>.
- 5 "Natural Carbon Sequestration in the Commonwealth."
- 6 "Chesapeake Bay TMDL Phase III Watershed Implementation Plan."

INVESTING IN VIRGINIA'S HERITAGE & FUTURE

- 1 Julia Freedgood, Mitch Hunter, Jennifer Dempsey, and Ann Sorenson, "Farms Under Threat: The State of the States," American Farmland Trust, page 68 (May 13, 2020). https://s30428.pcdn.co/wp-content/uploads/sites/2/2020/09/AFT_FUT_StateoftheStates_rev.pdf.
- 2 "Virginia Natural Resources Funding and How It Compares to Other States," Virginia Forever (2017). https://virginiaforever.org/wp-content/uploads/2017/10/Report_Comparison-of-Natural-Resource-Funding-in-Virginia.pdf.

ENSURING CONSISTENT SUPPORT FOR TRAILS & PARKS

- 1 Stovall, Frank. "Review of Overview of Capital Outlay Budget," Presentation to Senate Finance Committee and Appropriations - Capital Outlay Subcommittee (2022).
- 2 Alessandro Rigolon et al., "Inequities in the Quality of Urban Park Systems: An Environmental Justice Investigation of Cities in the United States," *Landscape & Urb. Plan.* 156 (2018):178. https://www.srs.fs.usda.gov/pubs/ja/2018/ja_2018_jennings_003.pdf.
- 3 Lizzie Johnson, "Ruining the Roller Coaster: Can the Appalachian Trail Survive Its Pandemic Popularity?" Washington Post (June 8, 2022). <https://www.washingtonpost.com/dc-md-va/2021/08/22/appalachian-trail-crowds-roller-coaster-hikers>.
- 4 "Benefits of Physical Activity," Centers for Disease Control and Prevention (November 1, 2021). <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm>.

5 "Designations," Florida Department of Environmental Protection (June 20, 2022). <https://floridadep.gov/parks/ogt/content/designations>.

6 Kaufman JD et al. "Association between air pollution and coronary artery calcification within six metropolitan areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): a longitudinal cohort study." *The Lancet* 388 no.10045 (May 2016): 696-704.

PRESERVING FARMLAND THROUGH CLIMATE-SMART AGRICULTURE

- 1 Lehner, Peter H, and Nathan A Rosenberg. *Farming for Our Future: The Science, Law, and Policy of Climate-Neutral Agriculture*. Washington, D.C.: Environmental Law Institute, (2021).
- 2 "Farms Under Threat: Agricultural Land Conversion Highlight Summary Virginia." American Farmland Trust (2020). https://storage.googleapis.com/csp-fut.appspot.com/reports/spatial/virginia_spatial.pdf.
- 3 M. Hunter, A. Sorensen, T. Nogueira-McRae, S. Beck, S. Shutts, R. Murphy. "Farms Under Threat 2040: Choosing an Abundant Future," American Farmland Trust (2022). https://farmlandinfo.org/wp-content/uploads/sites/2/2022/06/AFT_FUT2040_AbundantFuture-1.pdf.
- 4 Steward Regenerative Framework defines regenerative. <https://public.3.basecamp.com/p/owJPFdu327AUbuqx13DQqplX>.
- 5 Artem Milinchuk, "Is Regenerative Agriculture Profitable?" Forbes (January 30, 2020). <https://www.forbes.com/sites/forbesfinancecouncil/2020/01/30/is-regenerative-agriculture-profitable>.
- 6 "Office of Farmland Preservation Annual Report," Virginia Department of Agriculture and Consumer Services (December 2, 2021). <https://rga.lis.virginia.gov/Published/2021/RD788/PDF>.
- 7 "VLCF Funded Projects," Virginia Department of Conservation and Recreation, <https://www.dcr.virginia.gov/land-conservation/vlcf-grant-list>.

PROTECTING HISTORIC & CULTURAL RESOURCES

- 1 "Preserving the Past, Building the Future: HRTC at Work in Virginia Executive Summary," Virginia Department of Historic Resources (January 2018). <https://www.dhr.virginia.gov/wp-content/uploads/2018/04/DHR-HRTC-4-Page-Executive-Summary.pdf>.
- 2 "Virginia Historic Rehabilitation Tax Credits," Preservation Virginia (December 2017). http://preservationva.wpengin.com/wp-content/uploads/2018/08/VA_HTC_Full_Report_.pdf.
- 3 "DHR Announces 2021 Virginia Battlefield Preservation Grants to Protect 441 Acres," Virginia Department of Historic Resources (October 2021). <https://www.dhr.virginia.gov/news/dhr-announces-2021-virginia-battlefield-preservation-grants-to-protect-441-acres>.

SECURING LASTING FUNDING FOR LAND CONSERVATION

- 1 "Big Increase in Parks Visitation in 2021," Virginia Department of Conservation and Recreation (2022). <https://www.dcr.virginia.gov/insights/big-increase-in-parks-visitation-in-2021>.
- 2 John Griffin, "Legislative Results in Maryland," Chesapeake Conservation Partnership (May 17, 2022). <https://www.chesapeakeconservation.org/legislative-results-in-maryland>.
- 3 "Land and Water Conservation Fund," National Park Service (October 27 2016). <https://www.nps.gov/subjects/wlcf/stateside.htm>.
- 4 "Forest Legacy," U.S. Forest Service, 2022, <https://www.fs.usda.gov/managing-land/private-land/forest-legacy>.
- 5 "Agricultural Conservation Easement Program | Virginia," USDA Natural Resources Conservation Service (2022) <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/va/programs/easements/acep>.
- 6 "Readiness and Environmental Protection Integration," U.S. Department of Defense (2022). <https://www.repi.mil>.
- 7 "Montana Marijuana Sales Tax Revenue Distribution," Montana Legislative Fiscal Division (March 2022). https://leg.mt.gov/content/Publications/fiscal/leg_reference/Brochures/MJ-sales-distro.pdf.
- 8 "Georgia Outdoor Stewardship Program," Georgia Department of Natural Resources (2022) <https://gadnr.org/gosp>.
- 9 "Sporting Goods Sales Tax (SGST) Summary," State of Texas Legislative Budget Board (February 2018). https://www.lbb.texas.gov/Documents/Publications/Info_Graphic/3043_SGST_2_13_18.pdf.
- 10 "Maryland Conservation Programs," Trust for Public Land (2022). <https://conservationmanac.org/programs/maryland>.
- 11 "Survey of Virginia Voters Shows Overwhelming, Consistent Support for Conservation Funding," The Nature Conservancy (June 1 2021). https://www.nature.org/content/dam/tnc/nature/en/documents/VA_Conservation_Funding_Poll_Results_2021.pdf.

INCREASING INVESTMENT IN TREES

- 1 K. L. Wolf, et al., "Urban Trees and Human Health: A Scoping Review." *International journal of environmental research and public health* 17 no. 12 (2020): 4371. <https://doi.org/10.3390/ijerph17124371>.
- 2 Douglas, W. Tallamy, *Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard*. Portland, Oregon: Timber Press (2020).
- 3 "Virginia Natural Landscape Assessment," Virginia Department of Conservation and Recreation (July 2018). <https://www.dcr.virginia.gov/natural-heritage/vaconvisvnia>.
- 4 H.-O. Pörtner, et al., IPCC, 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–33, doi:10.1017/9781009325844.001.
- 5 J.Hynicka and D. Caraco, "Relative and Absolute Reductions in Annual Water Yield and Non-Point Source Pollutant Loads of Urban Trees," Center for Watershed Protection (2017). <https://ow1.cwp.org/mdocs-posts/relative-and-absolute-reductions-in-annual-water-yield-and-non-point-source-pollutant-loads-of-urban-trees>.
- 6 Safford, H.; Larry, E.; McPherson, E.G.; Nowak, D.J.; Westphal, L.M., "Urban Forests and Climate Change," U.S. Department of Agriculture, Forest Service, Climate Change Resource Center (August 2013). www.fs.usda.gov/ccrc/topics/urban-forests.
- 7 "Heat Island Effect." Environmental Protection Agency (June 6, 2022). <https://www.epa.gov/heatislands>.
- 8 Jeremy S. Hoffman, "Throwing Shade in RVA." Jeremy S. Hoffman, Ph.D. (2020). <http://jeremyscotthoffman.com/throwing-shade>.

INVESTING IN WILDLIFE CROSSINGS & HABITAT CONNECTIVITY

- 1 Robert Repetto, "Economic and Environmental Impacts of Climate Change in Virginia," Demos (2012). <https://www.demos.org/research/economic-and-environmental-impacts-climate-change-virginia>.
- 2 Stephen C. Trombulak & Christopher A. Frissell, "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities," *Conservation Biology* 18 no.30 (2000).
- 3 Virginia Wildlife Corridor Action Plan (2020). <https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+SB1004&201+ful+SB1004>.
- 4 Title 29.1, Ch. 5, Article 8 § 29.1-579, Wildlife Corridor Action Plan, <https://law.lis.virginia.gov/vacode/title29.1/chapter5/section29.1-579>.
- 5 "Virginia's Highway System," Virginia Dept. of Transportation (November 1, 2109). https://www.virginiadot.org/about/vdot_hgwy_sys.asp.
- 6 "How likely are you to have an animal collision?," State Farm Simple Insights (2022). <https://www.statefarm.com/simple-insights/auto-and-vehicles/how-likely-are-you-to-have-an-animal-collision>.
- 7 Marcel Huijser et al., "Wildlife-Vehicle Collision Reduction Study: Report to Congress," U.S. Dept. of Transportation, FHWA-HRY-08034, 8 (2008).
- 8 Marcel Huijser, "Wildlife-Vehicle Collision Reduction Study."
- 9 Trombulak & Frissell, "Ecological Effects of Roads," *Conservation Biology* 14: 18-30.
- 10 Piedmont Environmental and Trout Unlimited, "Assessing Impediments to Free Passage of Eastern Brook Trout in Rivers Flowing from Shenandoah National Park into the Rappahannock River Watershed: Final Programmatic Report for U.S. Fish and Wildlife Service Cooperative Agreement FGR1334053FP36," (March 2, 2015). https://wildvirginia.org/wp-content/uploads/2020/07/PECBKT_Report_FINAL.pdf.
- 11 Lisa Moss, "Culvert Assessment in the Lower James River Basin of Virginia," U.S. Fish and Wildlife Service (2016). https://citrust.org/wp-content/uploads/GIT13671_FinalReportII_Culvert-Assessment.pdf.
- 12 Bridget Donaldson, "Enhancing Existing Isolated Underpasses with Fencing to Decrease Wildlife Crashes and Increase Habitat Connectivity: Final Report, VTRC 20-R28," Virginia Transportation Research Council (2019). http://www.virginiadot.org/vtrc/main/online_reports/pdf/20-R28.pdf.
- 13 Bridget Donaldson, "Enhancing Existing Isolated Underpasses with Fencing."
- 14 Donald Wuebbles et al., "Fourth National Climate Assessment (NCA4), Volume I," Climate Science Special Report (2017). https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf.

EXPEDITING THE OYSTER'S RECOVERY

- 1 "CHESAPEAKE BAY WATERSHED AGREEMENT 2014," Chesapeake Executive Council, January 24, 2020, https://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreementwithsignatures-Hires.pdf.

PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS

- 1 Kreeger, Danielle A., Catherine M. Gatenby, and Peter W. Bergstrom. "Restoration Potential of Several Native Species of Bivalve Molluscs for Water Quality Improvement in Mid-Atlantic Watersheds," *Journal of Shellfish Research* 37, no. 5 (December 2018): 1121–57. <https://doi.org/10.2983/035.037.0524>.
- 2 Vaughn, C. C. "Ecosystem Services Provided by Freshwater Mussels," *Hydrobiologia* 810, no. 1 (March 15, 2018): 15–27. <https://doi.org/10.1007/s10750-017-3139-x>.
- 3 Stein, Bruce A., Lynn S. Kutner, Jonathan S. Adams, and Edward O. Wilson. *Precious Heritage: The Status of Biodiversity in the United States*. Oxford University Press, Incorporated (2000). <http://ebookcentral.proquest.com/lib/vcu/detail.action?docID=430267>.
- 4 "Freshwater Mussel Restoration," Virginia Department of Wildlife Resources, 2022, <https://dwr.virginia.gov/wildlife/freshwater-mussels/restoration>.
- 5 Wood, J., P. Bukaveckas, H. Galbraith, M. Gattis, M. Gray, T. Ihde, D. Kreeger, R. Mair, S. McLaughlin, S. Hahn, A. Harvey. *Incorporating Freshwater Mussels into the Chesapeake Bay Restoration Effort*. STAC Publication Number 21-004, Edgewater, MD (2021). 39 pages.

BUILDING SUSTAINABLE FISHERIES

- 1 "A Lean Year for Chesapeake Bay Blue Crabs," Virginia Marine Resources Commission (May 19, 2022). https://www.mrc.virginia.gov/news_releases/2022/2022-05-19-VA-WDS-Press-Release.pdf.
- 2 "A Lean Year for Chesapeake Bay Blue Crabs."
- 3 "A Lean Year for Chesapeake Bay Blue Crabs."
- 4 Surry Power Station: Clean Water Act §316(b) Compliance Submittal Requirements §122.21(r)(2)-(9) Reports (February 15, 2019).
- 5 "National Pollutant Discharge Elimination System-Final Regulations To Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities," *Federal Register* 79, No. 48299 (August 15, 2014). <https://www.federalregister.gov/d/2014-12164>.
- 6 "National Pollutant Discharge Elimination System-Final Regulations."

TRANSFORMING TRANSPORTATION

- 1 Kimberly Pryor, "Final FY 2023 - 2028 Six-Year Improvement Program (SYIP)," Virginia Department of Transportation, June 21, 2022, www.ctb.virginia.gov/resources/2022/june/pres/7.pdf.
- 2 Todd Litman, "Generated Traffic and Induced Travel: Implications for Transportation Planning," Victoria Transport Policy Institute, June 3, 2022, www.vtpi.org/gentraf.pdf.
- 3 "Energy Related CO2 Emission Data Tables," U.S Energy Information Administration, www.eia.gov/environment/emissions/state.
- 4 "The Road to Clean Air: Benefits of a Nationwide Transition to Electric Vehicles," American Lung Association, www.lung.org/getmedia/99cc945c-47f2-4ba9-ba59-14c311ca332a/electric-vehicle-report.pdf.

BOOSTING SMART GROWTH

- 1 Kaufman, JD et al. "Association between air pollution and coronary artery calcification within six metropolitan areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): a longitudinal cohort study," *The Lancet* 388 no.10045 (May 2016): 696-704.
- 2 Joe Cortright, "Driven to the Brink: How the Gas Price Spike Popped the Housing Bubble and Devalued the Suburbs," CEOs for Cities, 2008. Report not available following merger of CEOs for Cities into Forward Cities, see Smart Growth America blog: <https://smartgrowthamerica.org/ceos-for-cities-report-driven-to-the-brink>.
- 3 "Your Driving Costs: How Much Are You Paying to Drive?" AAA, 2019, <https://exchange.aaa.com/wp-content/uploads/2019/09/AAA-Your-Driving-Costs-2019.pdf>.
- 4 Robert W. Burchell, "Costs of Sprawl – 2000," The National Academies of Sciences, Engineering, and Medicine, August 31, 2001, http://www.trb.org/Publications/Blurbs/Costs_of_Sprawl_2000_160966.aspx.

REDUCING VEHICLE POLLUTION

- 1 "CDC Health Disparities and Inequalities Report – United States, 2013 Morbidity and Mortality Weekly Report," *Center for Disease Control and Prevention MMWR* 62 no. 3 (2013): 48. https://stacks.cdc.gov/view/cdc/20872/cdc_20872_DS1.pdf.
- 2 "Asthma Capitals: Top 100 Most Challenging Cities to Live in with Asthma," Asthma and Allergy Foundation of America, 2018, <https://www.aafa.org/asthma-capitals>.
- 3 "An Assessment of the Health Burden of Ambient PM2.5 Concentrations in Virginia," Industrial Economics, Incorporated (October 28, 2020). https://cee8204b-70a4-447f-9567-a8b385f8bd93.filesusr.com/ugd/b42d13_16d1da1c63e84d328db4239aea371617.pdf.
- 4 Arter et al. "Health and Equity Impact Assessment of the Transportation Climate Initiative," Conference presentation, TRECH Project, February 25, 2021, <https://cdnl.sph.harvard.edu/wp-content/uploads/sites/2343/2021/02/TRECH-SlidedeckUpdateFeb2021.pdf>.
- 5 "An Assessment of the Health Burden."
- 6 Leah Lazer and Lydia Freehafer, "The State of Electric School Bus Adoption in the US," World Resources Institute, August 2021, <https://www.wri.org/insights/where-electric-school-buses-us>.
- 7 "Living close to Roadways: Health Concerns and Mitigation Strategies," US EPA, January 10, 2017, <https://www.epa.gov/sciencematters/living-close-roadways-health-concerns-and-mitigation-strategies>.
- 8 "Benefits of Trees," International Society of Arboriculture, 2004.
- 9 Dr. Kim D. Coder, "Identified Benefits of Community Trees and Forests" (University of Georgia Cooperative Extension Service Forest Resources Unit Publication FOR96-39, October 1996).
- 10 Kaufman, Joel D. Kaufman, et al. 2016. "Association between Air Pollution and Coronary Artery Calcification within Six Metropolitan Areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): A Longitudinal Cohort Study." *Lancet* 388 (10045): 696. [https://doi.org/10.1016/S0140-6736\(16\)00378-0](https://doi.org/10.1016/S0140-6736(16)00378-0).

ACCELERATING TRANSPORTATION ELECTRIFICATION

- 1 "State Energy-related Carbon Dioxide Emissions Tables," U.S. Energy Information Association (March 2021). <https://www.eia.gov/environment/emissions/state>.
- 2 "Inequitable Exposure to Air Pollution from Vehicles in the Northeast and Mid-Atlantic," Union of Concerned Scientists (2019). <https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles>.
- 3 "An Assessment of the Health Burden of Ambient PM2.5 Concentrations in Virginia," Industrial Economics, Incorporated (October 28, 2020). https://cee8204b-70a4-447f-9567-a8b385f8bd93.filesusr.com/ugd/b42d13_16d1da1c63e84d328db4239aea371617.pdf.
- 4 Arter et al. "Health and Equity Impact Assessment of the Transportation Climate Initiative," Conference presentation, TRECH Project (February 25, 2021). <https://cdnl.sph.harvard.edu/wp-content/uploads/sites/2343/2021/02/TRECH-SlidedeckUpdateFeb2021.pdf>.
- 5 "An Assessment of the Health Burden of Ambient PM2.5 Concentrations in Virginia."
- 6 Chris Harto, "Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers," *Yonkers, NY: Consumer Reports* (October 2020). <https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf>.
- 7 James Horrox and Matthew Casale, "Electric Buses in America: Lessons from Cities Pioneering Clean Transportation," U.S. PIRG Education Fund (October 2019). https://uspig.org/sites/pirg/files/reports/ElectricBusesInAmerica/US_Electric_bus_scrn.pdf.
- 8 "Virginia Drives Electric: Benefits, Barriers, and Policies Needed for Widespread EV Adoption in Virginia," Generation180 (November 2020). <https://generation180.org/virginia-drives-electric-2020-download-page>.
- 9 D. Hall & M. Nicholas, "Lessons Learned on Early Electric Vehicle Fast-Charging Deployments," International Council on Clean Transportation (2018). https://theicct.org/sites/default/files/publications/ZEV_fast_charging_white_paper_final.pdf.
- 10 "Advanced Energy Employs 93,200 in Virginia." Advanced Energy Economy. Accessed (June 22, 2022). <https://info.aee.net/2021-state-jobs-fact-sheets>.
- 11 "Alternative Fuels Data Center: Emissions from Hybrid and Plug-in Electric Vehicles," U.S. Department of Energy (2019). https://afdc.energy.gov/vehicles/electric_emissions.html.
- 12 "Electric Vehicles for All: An Equity Toolkit," Greenlining Institute (August 3, 2016). <https://greenlining.org/resources/electric-vehicles-for-all>.
- 13 "Bipartisan Infrastructure Law - 5-Year National Electric Vehicle Infrastructure Funding by State," Federal Highway Administration. (February 10, 2022). https://www.fhwa.dot.gov/bipartisan-infrastructure-law/evs_5year_nevi_funding_by_state.cfm.
- 14 "Commonwealth of Virginia State Corporation Commission Report to the Virginia General Assembly Report: Policy Proposals Governing Public Electric Utility Programs to Accelerate Widespread Transportation Electrification in the Commonwealth pursuant to Chapter 268 of the 2021 Virginia Acts of Assembly (Special Session I) (HB 2282)." 2022. <https://scc.virginia.gov/getattachment/94cafe4e-3091-4e53-ae30-29d469a013a0/2022-APR-Report-on-Transportation-Electrification.pdf>.
- 15 Ellen Robo, "Virginia Transportation Electrification Stakeholder Process Report PROCESS SUMMARY and POLICY PROPOSALS about This Report Facilitation Team and Report Authors Modeling Team and Report Authors." (2022). <https://scc.virginia.gov/getattachment/24324795-3562-4f1c-8ac8-1c3c68e9fcd/2022-Transportation-Electrification-Report.pdf>.

INCREASING WALKING & BIKING

- 1 “U.S. Bicycling Participation Report Archive: People for Bikes.” People For Bikes. Breakaway Research Group, 2018. <https://www.peopleforbikes.org/reports/us-bicycling-participation-report>.
- 2 “American Community Survey 5-Year Estimate.” Census Bureau, 2020. <https://data.census.gov/cedsci/table>.
- 3 “New Report Finds Traffic Crash Fatalities Disproportionately Affect Black, Indigenous and People of Color,” Governor’s Highway Safety Association report, 2021. <https://www.ghsa.org/resources/news-releases/Equity-Report21>.
- 4 “BikeArlington Counter Dashboard.” Arlington County, 2022. <https://counters.bikearlington.com>.
- 5 “2020 Impact Report.” Virginia Capital Trail Foundation. 2020. <https://www.virginiacapitaltrail.org/s/2020-Impact-Report.pdf>.
- 6 “State Bicycling Policy Plan.” VDOT. 2011. https://www.virginiadot.org/programs/bicycling_and_walking/bicycle_policy_plan.asp.
- 7 “CTB Policy for Integrating Bicycle and Pedestrian Accommodations,” Virginia Department of Transportation, 2004, https://www.virginiadot.org/programs/resources/bike_ped_policy.pdf.

IMPROVING PUBLIC TRANSIT

- 1 “Virginia Transportation and Commute Statistics,” LiveStories, <https://www.livestories.com/statistics/virginia/transportation-commute>.
- 2 Chris Horne, “Investigation: Hampton Roads Transit, Union Agree More Drivers Needed to Reduce Missed Stops,” WAVY.com. (September 30, 2019). <https://www.wavy.com/news/investigative/special-report-left-at-the-curb>.
- 3 Anne Sparaco, “More people in Virginia take public transportation as gas prices rise, workers commute to office,” 12NewsNow. (March 14, 2022). <https://www.13newsnow.com/article/news/local/virginia/people-choose-public-transportation-gas-prices-rise/291-8b1cd8e6-b4d1-4986-95d5-e53c18e5ee64>.
- 4 “How much have used car prices gone up in Virginia?” WFXR Fox. (December 13, 2021). <https://www.wfxrtv.com/reviews/br/automotive-br/how-much-have-used-car-prices-gone-up-in-virginia>.
- 5 “Energy-Related CO2 Emission Data Tables,” U.S. Energy Information Administration. (April 13, 2022). <https://www.eia.gov/environment/emissions/state>.

EXPANDING RAIL

- 1 “Amtrak Fact Sheet Fiscal Year 2019: Commonwealth of Virginia,” Amtrak, <https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/statefactsheets/VIRGINIA19.pdf>.
- 2 “Monthly Performance Report: FY 2019,” Amtrak (April 10, 2020). <https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/monthlyperformancereports/2019/Amtrak-Monthly-Performance-Report-FY2019-Final.pdf>.
- 3 Virginia Passenger Rail Authority. <https://vapassengerrailauthority.org>.

REALIZING VIRGINIA’S CLEAN ENERGY TRANSFORMATION

- 1 “Low-Income Energy Affordability Data (LEAD) Tool,” Office of Energy Efficiency & Renewable Energy. <https://www.energy.gov/eere/slsc/maps/lead-tool>.
- 2 Douglas Jester, “VCEA Costs & Savings to the Virginia Ratepayer: An Updated Analysis,” Advanced Energy Economy (February 7, 2022). <https://info.aee.net/vcea-costs-and-savings-to-virginia-ratepayers-an-updated-analysis>.
- 3 “Virginia Energy Policy Simulator,” Energy Policy Solutions (2022). <http://Virginia.energy.policiesolutions>. (Policy Scenario Selector set to “VCEA,” Output Graph Selector set to “Human Health and Social Benefits”)

POWERING SCHOOLS WITH LOW-COST SOLAR

- 1 “Affordable Zero Energy K-12 Schools: The Cost Barrier Illusion,” U.S. Department of Energy. <https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/80766.pdf>.
- 2 “Zero Energy Schools,” Better Building Solution Center: U.S. Department of Energy. <https://betterbuildingssolutioncenter.energy.gov/accelerators/zero-energy-schools>.
- 3 “How Energy Efficiency Can Alleviate High Energy Burdens,” American Council for an Energy Efficient Economy. <https://www.aceee.org/sites/default/files/energy-affordability.pdf>.
- 4 “Needs and Conditions of Virginia School Buildings,” Virginia Department of Education (June 2021). https://studies.virginiageneralassembly.s3.amazonaws.com/meeting_docs/documents/000/000/979/original/Needs_and_Conditions_of_Virginia_School_Buildings_6.3.21.pdf?1622733329.
- 5 “A Study on Solar in U.S. Schools: Brighter Future Report 2020,” Generation180. <https://generation180.org/brighter-future-2020-download>.
- 6 “2021 Infrastructure Investment and Jobs Act: Resources for schools,” U.S. Green Buildings Council, <https://www.usgbc.org/articles/2021-infrastructure-investment-and-jobs-act-resources-schools>.
- 7 “This Arkansas school turned solar savings into better teacher pay,” Energy News Network (October 2020). <https://energynews.us/2020/10/16/this-arkansas-school-turned-solar-savings-into-better-teacher-pay>.
- 8 Perkins-Eastman, “NET ZERO ENERGY,” Fairfax County Public Schools (November 2020). <https://www.fcps.edu/sites/default/files/Net-Zero-Energy-Study.pdf>.
- 9 “Needs and Conditions of Virginia School Buildings,” June 2021.

CREATING JOBS & SAVINGS WITH ENERGY EFFICIENCY

- 1 “2020 Average Monthly Bill-Commercial (Data from Forms EIA-861-Schedules 4A-D, EIA-861S and EIA-861U).” (2020). https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_b.pdf.
- 2 “Average Energy Burden for Counties in Virginia.” 2019a. Low-Income Energy Affordability Data (LEAD) Tool. U.S. Department of Energy. (2019). <https://www.energy.gov/eere/slsc/maps/lead-tool>.
- 3 “How Energy Efficiency Can Alleviate High Energy Burdens,” American Council for an Energy Efficient Economy. <https://www.aceee.org/sites/default/files/energy-affordability.pdf>.
- 4 “State Level Electric Energy Efficiency Potential Estimates,” EPRI, Palo Alto, CA (May 11, 2017): 3002009988. <https://www.epri.com/research/products/00000003002009988>.
- 5 “Energy Efficiency,” Office of Energy Efficiency and Renewable Energy, <https://www.energy.gov/eere/energy-efficiency>.
- 6 BW Research Partnership, “Clean Jobs, Better Jobs: An Examination of Clean Energy Job Wages and Benefits.” Environmental Entrepreneurs, American Council on Renewable Energy, Clean Energy Leadership Institute (2020).
- 7 “Low-Income Community Energy Solutions,” Office of Energy Efficiency and Renewable Energy, <https://www.energy.gov/eere/slsc/low-income-community-energy-solutions>.
- 8 Nicole Duimstra, “Virginia Clean Economy Act: 4 Things to Know,” Virginia Conservation Network (July 1, 2021). <https://vcnva.org/virginia-clean-economy-act-anniversary>.
- 9 “The 2020 State Energy Efficiency Scorecard.” American Council for an Energy Efficient Economy (December 16, 2020). <https://www.aceee.org/research-report/u2011>.
- 10 “2020 Average Monthly Bill-Commercial,” U.S. Energy Information Administration (2020). https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_b.pdf.
- 11 “Multifamily Housing and Energy Efficiency: An Opportunity for Virginia to Lead,” Energy Efficiency for All, <https://www.energyefficiencyforall.org/resources/multifamily-housing-and-energy-efficiency-an-opportunity-for-virginia-to-lead>.
- 12 Ariel Dreihobl, Lauren Ross, and Roxana Ayala, “How High Are Household Energy Burdens?” American Council for an Energy Efficient Economy (September 2020). <https://www.aceee.org/sites/default/files/pdfs/u2006.pdf>.
- 13 Sara Baldwin, “Building Electrification Could Recharge Our Economy – and Save the Climate.” Forbes (September 20, 2021). <https://www.forbes.com/sites/energyinnovation/2021/09/20/building-electrification-could-recharge-our-economy--and-save-the-climate>.
- 14 Eric Wilson, Craig Christensen, Scott Horowitz, Joseph Robertson, and Jeff Maguire. “Energy Efficiency Potential in the U.S. Single-Family Housing Stock.” National Renewable Energy Laboratory (2017): 62–63. <https://resstock.nrel.gov/factsheets/VA>.
- 15 “About the Commercial Buildings Integration Program.” Office of Energy Efficiency and Renewable Energy, <https://www.energy.gov/eere/buildings/about-commercial-buildings-integration-program>.
- 16 “Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas.” American Council for an Energy Efficient (2019). <https://www.aceee.org/fact-sheet/halfway-there>.
- 17 Gina Coplon-Newfield, “Energy and Employment Report by State 2022,” U.S. Department of Energy (June 2022). https://www.energy.gov/sites/default/files/2022-06/USEER%202022%20State%20Report_0.pdf.
- 18 “Lessons in Residential Electrification,” Community Climate Collaborative. <https://theclimatecollaborative.org/lessons-in-residential-electrification>.
- 19 “New Data, Same Results – Saving Energy Is Still Cheaper than Making En.” American Council for an Energy Efficient, <https://www.aceee.org/blog/2017/12/new-data-same-results-saving-energy>.

ADVANCING AN AFFORDABLE & EQUITABLE CLEAN ENERGY TRANSITION

- 1 J. C. Kibbey. “Utility Accountability 101: How Do Utilities Make Money?” NRDC (January 20, 2021). <https://www.nrdc.org/experts/jc-kibbey/utility-accountability-101-how-do-utilities-make-money>.
- 2 Virginia code section § 56-585.1.A.8.b. <https://law.lis.virginia.gov/vacode/title56/chapter23/section56-585.1>.
- 3 Kaufman JD et al. “Association between air pollution and coronary artery calcification within six metropolitan areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): a longitudinal cohort study.” *The Lancet* 388 no.10045 (May 2016): 696-704.
- 4 Xu-Qin Jiang, Xiao-Dong Mei, and Di Feng, “Air pollution and chronic airway diseases: what should people know and do?” *J Thorac Dis.* 8 no.1 (January 2016): E31-E40.
- 5 “Electric Sales, Revenue, and Average Price - Energy Information Administration,” U.S. Energy Information Administration (October 7, 2021). https://www.eia.gov/electricity/sales_revenue_price.
- 6 “Electricity Burden and the Myth of Virginia’s Rate Utopia,” Virginia Poverty Law Center (August 15, 2018). <https://vplc.org/electricity-burden-and-the-myth-of-virginias-rate-utopia>.
- 7 Ariel Dreihobl and Roxana Ayala, “Review of How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burdens across the U.S. Washington, D.C.” American Council for an Energy-Efficient Economy (2020). <https://www.aceee.org/research-report/u2006>.
- 8 “Virginia SCC - New Releases.” Virginia.gov (2021). <https://scc.virginia.gov/newsreleases/release/SCC-Approves-Settlement-in-Dominion-Financial-Revi>.
- 9 Gennelle Wilson, Cory Felder, Rachel Gold, “States Move Swiftly on Performance-Based Regulation to Achieve Policy Priorities,” RMI (March 31, 2022). <https://rmi.org/states-move-swiftly-on-performance-based-regulation-to-achieve-policy-priorities>.
- 10 Herman K. Trubish, “Hawaii’s New Fuel Price Performance Incentive Gives HECO ‘Skin in the Game.’” Utility Dive (August 6, 2018). <https://www.utilitydive.com/news/hawaiis-new-fuel-price-performance-incentive-gives-heco-skin-in-the-game/528329>.

GETTING IT RIGHT WITH UTILITY SCALE SOLAR

- ¹ The VCEA declared 16,100 MW of solar and on-shore wind to be in the public interest.
- ² "Virginia Solar Survey Report," Virginia Department of Energy (May 18, 2022). https://solar.coopercenter.org/sites/solar/files/media/files/2022-05/VASolarSurveyReport_Complete_2022-05-18_Updated.pdf
- ³ "Virginia Solar Survey Report."
- ⁴ M. Hunter, A. Sorensen, T. Nogueira-McRae, S. Beck, S. Shutts, R. Murphy. "Farms Under Threat 2040: Choosing an Abundant Future," American Farmland Trust (2022). https://farmlandinfo.org/wp-content/uploads/sites/2/2022/06/AFT_FUT2040_AbundantFuture-1.pdf

PREVENTING PIPELINE HARMS

- ¹ "IPCC Sixth Assessment Report," International Panel on Climate Change (February 28, 2022). <https://www.ipcc.ch/report/ar6/wg2/resources/press/press-release>.
- ² Ihab Mikati et al., "Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status," *American Public Health Association* (Mar. 7, 2018), <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2017.304297>.
- ³ "MVP, LLC To Pay More Than \$2 Million, Submit To Court-Ordered Compliance and Enhanced, Independent, Third-Party Environmental Monitoring," Office of the Attorney General (Oct. 11, 2019), <https://www.oag.state.va.us/media-center/news-releases/1548-october-11-2019-mvp-llc-to-pay-more-than-2-million-submit-to-court-ordered-compliance-and-enhanced-independent-third-party-environmental-monitoring>.
- ⁴ "Response to Mountain Valley Pipeline on Greenhouse Gas Emissions Filed in FERC Docket," (December 8, 2021). <https://www.ipcc.ch/report/ar6/wg2/resources/press/press-release>.
- ⁵ "Petition for Rehearing and Immediate Stay of the Order of the Rosebud Sioux Tribe, the Cheyenne River Sioux Tribe, the Blue Ridge Environmental Defense League, and Affected Individual Landowners," Federal Energy Regulatory Commission ELibrary Docket CP16-10. FERC. (May 18, 2018). https://elibrary.ferc.gov/eLibrary/filelist?document_id=14666892.
- ⁶ Carl Zipper, "Social Environmental Impacts of MVP GHGs," Federal Energy Regulatory Commission ELibrary Docket CP21-57 (March 22, 2021). https://elibrary.ferc.gov/eLibrary/filelist?accession_num=20210322-5387.
- ⁷ Zach Hirsch, "At a Crossroads Sea Level Rising is compromising septic systems around coastal Virginia," WHRO Public Media (December 6, 2021). <https://whro.org/news/local-news/24820-at-a-crossroads-sea-level-rise-is-compromising-septic-systems-around-coastal-virginia>.

PROTECTING OUR WATER FROM METALS MINING

- ¹ "Gold," Virginia Department of Mines, Minerals and Energy (2007). <https://energy.virginia.gov/geology/gold.shtml>.
- ² "Toxic Release Inventory National Analysis 2019: Comparing Industry Sectors," Environmental Protection Agency (January 2001). https://www.epa.gov/sites/production/files/2021-01/documents/section_4_industry_sectors.pdf.
- ³ "Acid Mine Drainage," Earthworks (accessed Jun 8, 2022), https://www.earthworks.org/issues/acid_mine_drainage.
- ⁴ "Mining 101," Earthworks (accessed June 8, 2022), <https://www.earthworks.org/issues/mining>.
- ⁵ "Aston Bay Announces Exploration Agreement For Gold Exploration Property In Virginia, USA," Aston Bay Holdings, (March 4, 2019): <https://astonbayholdings.com/news/aston-bay-announces-exploration-agreement-for-gold-exploration-property-in-virginia-usa>.
- ⁶ "Aston Bay Holdings Intercepts 37.70 G/T Au Over 1.5 M And 6.56 G/T Au Over 2.18 M In Completed Phase 2 Results At Its Buckingham Gold Project, Virginia, USA," Aston Bay Holdings, LLC (October 13, 2020). <https://astonbayholdings.com/news/aston-bay-intercepts-37.70-g-t-au-over-1.5-m-and-6.56-g-t-au-over-2.18-m-in-completed-phase-2>.
- ⁷ David B. Spears and Michael L. Upchurch, "Metallic Mines, Prospects and Occurrences in the Gold-Pyrite Belt of Virginia," Virginia Department of Energy (1997). https://dmme.virginia.gov/commercedocs/PUB_147.pdf.
- ⁸ "Virginia Map," Mapping for Environmental Justice, <https://mappingforej.berkeley.edu/virginia>.
- ⁹ Virginia Environmental Justice Act. <https://law.lis.virginia.gov/vacodefull/title2.2/chapter2/article12>.
- ¹⁰ "Gold."
- ¹¹ "State of the James," James River Association (2021), <https://thejamesriver.org/about-the-james-river/state-of-the-james>.
- ¹² "Mineral Mining," Virginia Department of Energy (2022). <https://energy.virginia.gov/mineral-mining/mineralmining.shtml>.
- ¹³ An Act to require the establishment of a workgroup to study the mining and processing of gold in the Commonwealth; report. <https://lis.virginia.gov/cgi-bin/legp604.exe?212+ful+CHAP0423+pdf>.
- ¹⁴ "Abandoned Mines," Virginia Department of Energy (2022). <https://energy.virginia.gov/webmaps/MineralMining>.
- ¹⁵ Whitney Pipkin, "Developers strike contamination from Virginia gold mines," Bay Journal (February 25, 2022). https://www.bayjournal.com/news/pollution/developers-strike-contamination-from-virginia-gold-mines/article_e13b5500-958c-11ec-b325-e7be704ed91b.html.

CURBING ELECTRIC UTILITIES' POLITICAL INFLUENCE

- ¹ "Top Donors." Virginia Public Access Project (accessed June 1, 2022). <https://www.vpap.org/money/top-donors/?year=all>.
- ² "Donors Per Industry." Virginia Public Access Project (accessed June 1, 2022). https://www.vpap.org/money/donors-per-industry/52?recip_type=all&year=all. *Note that VPAP counts corporate contributions twice - once from the corporation to their Political Action Committee (PAC) and again from the PAC to committees and candidates.
- ³ "Campaign Contributions Limits: Overview." National Conference of State Legislatures (accessed June 1, 2022). <https://www.ncsl.org/research/elections-and-campaigns/campaign-contribution-limits-overview.aspx>.

ENSURING ACCESS TO ESSENTIAL UTILITIES

- ¹ "Lights out in the cold: Reforming utility shutoff practices as if human rights matter", Environmental and Climate Justice Program, NAACP, (March 2017). <https://naacp.org/resources/lights-out-cold>.
- ² Sonal Jessel, Samantha Sawyer, and Diana Hernandez. "Energy, poverty and health in climate change: A comprehensive review on an emerging literature." *Frontiers in Public Health*. (December 12, 2019). <https://doi.org/10.3389/fpubh.2019.00357>.
- ³ Trevor Memmott, Sanya Carley, Michelle Graff, and David M. Konisky. "Sociodemographic disparities in energy insecurity among low-income households before and during the COVID-19 pandemic." *Nature Energy* 6, no. 2 (2021): 186-193.
- ⁴ House Joint Resolution No. 538. (Number 4 and 8, respectively). <https://lis.virginia.gov/cgi-bin/legp604.exe?212+ful+HJ538ER>.
- ⁵ Dana Wiggins and Carmen Bingham. "VPLC Affordable Clean Energy Project". (2022). <https://vplc.org/affordable-clean-energy-project>.
- ⁶ Wiggins and Bingham, "VPLC Affordable Clean Energy Project."
- ⁷ "Electricity Sales, Revenue, and Average Price," U.S. Energy Information Administration (October 2021). <https://www.eia.gov/electricity/monthly/update/archive/november2020>.
- ⁸ Katrina Metzler, "Energy assistance in America: Past, present and future," National Energy and Utility Affordability Coalition (June 1, 2022). <https://vimeo.com/716179942/fa774d701>.
- ⁹ "Lights out in the cold."
- ¹⁰ Jeff Zethmayr and Ramandeep Singh Makhija, "Six unique load shapes: A segmentation analysis of Illinois residential electricity consumers." (2019). <https://www.citizensutilityboard.org/wp-content/uploads/2019/06/ClusterAnalysisFinal.pdf>.
- ¹¹ Illinois Climate and Equitable Jobs Act. Public Act 102-0662. Article 5. Sec. 16-105.17. 2021. <https://www.ilga.gov/legislation/publicacts/102/PDF/102-0662.pdf>.
- ¹² "Directory of State Low- and Moderate-Income Clean Energy Programs," Clean Energy States Alliance. (2022). <https://www.cesa.org/projects/state-energy-strategies-project/directory-of-state-lmi-clean-energy-programs>.
- ¹³ "Energy infrastructure: Sources of inequities and policy solutions for improving community health and wellbeing", Community Action Partnership, the Regulatory Assistance Project, the Robert Wood Johnson Foundation, and Synapse Energy Economics (April 29, 2020). <https://www.raponline.org/knowledge-center/energy-infrastructure-sources-of-inequities-and-policy-solutions-for-improving-community-health-and-wellbeing>.

PROMOTING ENVIRONMENTAL JUSTICE

- ¹ Friends of Buckingham v. State Air Pollution Control Bd., 947 F.3d 68, 87 (4th Cir. 2020) (quoting Nicky Sheats, "Achieving Emissions Reductions for Environmental Justice Communities Through Climate Change Mitigation Policy," William & Mary Environmental Law and Policy Review, 41, 382 (2017).
- ² Va. Code § 2.2-234, <https://law.lis.virginia.gov/vacodefull/title2.2/chapter2/article12>.
- ³ Va. Code § 2.2-234 et seq., <https://law.lis.virginia.gov/vacodefull/title2.2/chapter2/article12>.
- ⁴ Sarah Vogelsong, "Virginia Regulatory Board Denies Mountain Valley Pipeline Compressor Station Permit," Virginia Mercury, (December 3, 2021). <https://www.virginiamercury.com/2021/12/03/virginia-regulatory-board-denies-mountain-valley-pipeline-compressor-station-permit>.
- ⁵ Sarah Vogelsong, "Water Authority Abandons Plans to Site Pump Station at Rassawek," Virginia Mercury, (March 16, 2022). <https://www.virginiamercury.com/blog-va/water-authority-abandons-plans-to-site-pump-station-at-rassawek>.
- ⁶ Sydney Trent, "An educational haven for Black children during segregation makes endangered places list," Washington Post (June 3, 2021). <https://www.washingtonpost.com/history/2021/06/03/endangered-historic-places-list-pine-grove-virginia>.
- ⁷ Sarah Wade, "Air Pollution From a Virginia Landfill Is Making Residents Sick. Officials Won't Call It an Emergency," Southerly (December 1, 2021). <https://southerlymag.org/2021/12/01/air-pollution-from-a-virginia-landfill-is-making-residents-sick-officials-wont-call-it-an-emergency>.
- ⁸ Stephen Faleski, "Natural Gas Pipeline Expansion Would Pass Through Suffolk," Suffolk News-Herald (April 5, 2022). <https://www.suffolknewsherald.com/2022/04/05/natural-gas-pipeline-expansion-would-pass-through-suffolk>.
- ⁹ Erica Schoenberger, "Gold Mining Comes With Risks and Rewards. But Those Aren't Equally Shared," Virginia Mercury (May 4, 2022). <https://www.virginiamercury.com/2022/05/04/gold-mining-comes-with-risks-and-rewards-but-those-arent-equally-shared>.

EDUCATING FOR ENVIRONMENTAL LITERACY

- ¹ "21st Century Skills". The Glossary of Education Reform (August 25, 2016). <https://www.edglossary.org/21st-century-skills>.
- ² Rosalyn McKeown-Ice, "Environmental Education in the United States: A Survey of Preservice Teacher Education Programs," *The Journal of Environmental Education* 32 no.2000 (March 31, 2010): 4-11. <https://doi.org/10.1080/00958960009598666>.

INVESTING IN CLEAN AIR, CLEAN WATER, & HEALTHY LANDS

- ¹ Va. Const. art. XI §1.
- ² Va. Code § 2.2-234.
- ³ Terance J. Rephann, "Economic Impacts of Implementing Agricultural Best Management Practices to Achieve Goals Outlined in Virginia's Tributary Strategy," Center for Economic and Policy Studies and Weldon Cooper Center for Public Service, (Feb. 23, 2010). <https://www.cbf.org/document-library/non-cbf-documents/FINAL-Weldon-Cooper-Center-Ag-BMP-report3958.pdf>.
- ⁴ "Virginia's Return on Investment in Land Conservation," Trust for Public Lands, (August 2016), https://www.tpl.org/sites/default/files/VA%20ROI_report.pdf.
- ⁵ "Virginia's Outdoor Recreation Economy," Virginia Office of Outdoor Recreation, (last visited June 8, 2021). <https://www.governor.virginia.gov/outdoor>.
- ⁶ Vincent P. Magnini, "Virginia State Parks Economic Impact Report 2018," Virginia Tech Pamplin College of Business, (January 2019). <http://www.virginiaparks.org/document/2018-economic-impact-study.pdf>.



OUR PARTNERS

BALD EAGLE



CARDINAL

Alliance for the Shenandoah Valley · Appalachian Citizens' Law Center · Blue Ridge Land Conservancy · CASA · Chesapeake Legal Alliance · Clean Virginia · Climate Cabinet Education · Community Climate Collaborative · Electrification Coalition · Environment Virginia · Foundation Earth · Friends of the Rappahannock · Generation 180 · James River Garden Club · Lynnhaven River NOW · Natural Resources Defense Council · Potomac Conservancy · Powered by Facts · Shenandoah Valley Battlefields Foundation · The Nature Conservancy in Virginia · Valley Conservation Council · Virginia Aquarium and Marine Science Center Foundation · Waterkeepers Chesapeake · Wetlands Watch · Wildlands Network

TIGER SWALLOWTAIL BUTTERFLY

Allegheny-Blue Ridge Alliance · Appalachian Trail Conservancy · Appalachian Voices · Audubon Naturalist Society · Audubon Society of Northern Virginia · Bike Norfolk · Blue Ridge PRISM · Capital Region Land Conservancy · Center for Progressive Reform · Chesapeake Climate Action Network · Clean Fairfax Council · Clean Virginia Waterways · Coalition for Smarter Growth · East Coast Greenway Alliance · Edith J Carrier Arboretum at JMU · Faith Alliance for Climate Solutions · Friends of the Lower Appomattox River · Friends of the North Fork of the Shenandoah · Keep Virginia Beautiful · Loudon Wildlife Conservancy · Mothers Out Front · New River Land Trust · New Virginia Majority · Northern Virginia Conservation Trust · Oceana · Pew Charitable Trust · Potomac Riverkeeper Network · Preservation Virginia · Prince William Conservation Alliance · Richmond Audubon Society · Scenic Virginia · Shenandoah National Park Trust · Shenandoah Valley Bicycle Coalition · Sierra Club - Fall of the James Group · SouthWings · Trust for Public Land · Tuckahoe Garden Club of Westhampton · Unitarian Universalist Church of Roanoke · UVA Law School, Environmental and Regulatory Law Clinic · Virginia Association for Environmental Education · Virginia Association of Soil & Water Conservation Districts · Virginia Capital Trail Foundation · Virginia Clinicians for Climate Action · Virginia Environmental Justice Collaborative · Virginia Interfaith Power & Light · Virginia Living Museum · Virginia Native Plant Society · Virginia's United Land Trusts · Virginia Urban Forest Council · Virginians for High Speed Rail · Wild Virginia

DOGWOOD

Albemarle Garden Club · Alexandria Families for Safer Streets · Alliance for the Chesapeake Bay · Ashland Garden Club · Back Bay Restoration Foundation · Bike Walk RVA · Black Family Land Trust · Blue Ridge Garden Club · Boxwood Garden Club · Climate Action Alliance of the Valley · Clinch Coalition · Conservation Park of Virginia, Inc. · Cville100 · Drive Electric RVA · EcoAction Arlington · Friends of Accotink Creek · Friends of Buckingham · Friends of Dyke Marsh · Friends of James River Park · Friends of the Rivers of Virginia · Garden Club of the Middle Peninsula · Garden Club of Norfolk · Garden Club of the Northern Neck · Goose Creek Association · Groundwork RVA · Hands Across the Lake · Hunting Creek Garden Club · Keep Virginia Cozy · Leesburg Garden Club · Loudoun Climate Project · Mattaponi & Pamunkey Rivers Association · Mill Mountain Garden Club · Nelson County Garden Club · New River Valley Bicycle Association · Old Dominion Smallmouth Club · Partnership for Smarter Growth · Rail Solution · Rappahannock League for Environmental Protection · Rappahannock Valley Garden Club · Rivanna Conservation Alliance · Rivanna Garden Club · Rockbridge Conservation · Rockfish Valley Foundation · RVA Rapid Transit · Shenandoah Green · Sierra Club – Chesapeake Bay Group · Sierra Club – Great Falls Group · Sierra Club – Mount Vernon Group · Sierra Club – New River Valley Group · Sierra Club – Piedmont Group · Sierra Club – Potomac Region Outings Group · Sierra Club – Rappahannock Group · Sierra Club – Roanoke Group · Sierra Club – Shenandoah Group · Sierra Club – York River Group · Southside ReLeaf · Surfrider Foundation – Virginia Chapter · Tree Fredericksburg · Virginia Association for Biological Farming · Virginia Bicycling Federation · Virginia Chapter of the Wildlife Society · Virginia Composting Council · Virginia Council of Trout Unlimited · Virginia Green Travel Alliance · Virginia Society of Ornithology · Virginia Transit Association · Virginia Wilderness Committee · Washington Area Bicycle Association · Williamsburg Garden Club · Winchester-Clarke Garden Club · York River Stewards

