



U.S. Environmental Protection Agency
Mid-Atlantic Region

CLIMATE ADAPTATION IMPLEMENTATION PLAN



EXECUTIVE SUMMARY

*Prepared by the U.S. EPA Region III Climate Collaborative
October 2022*

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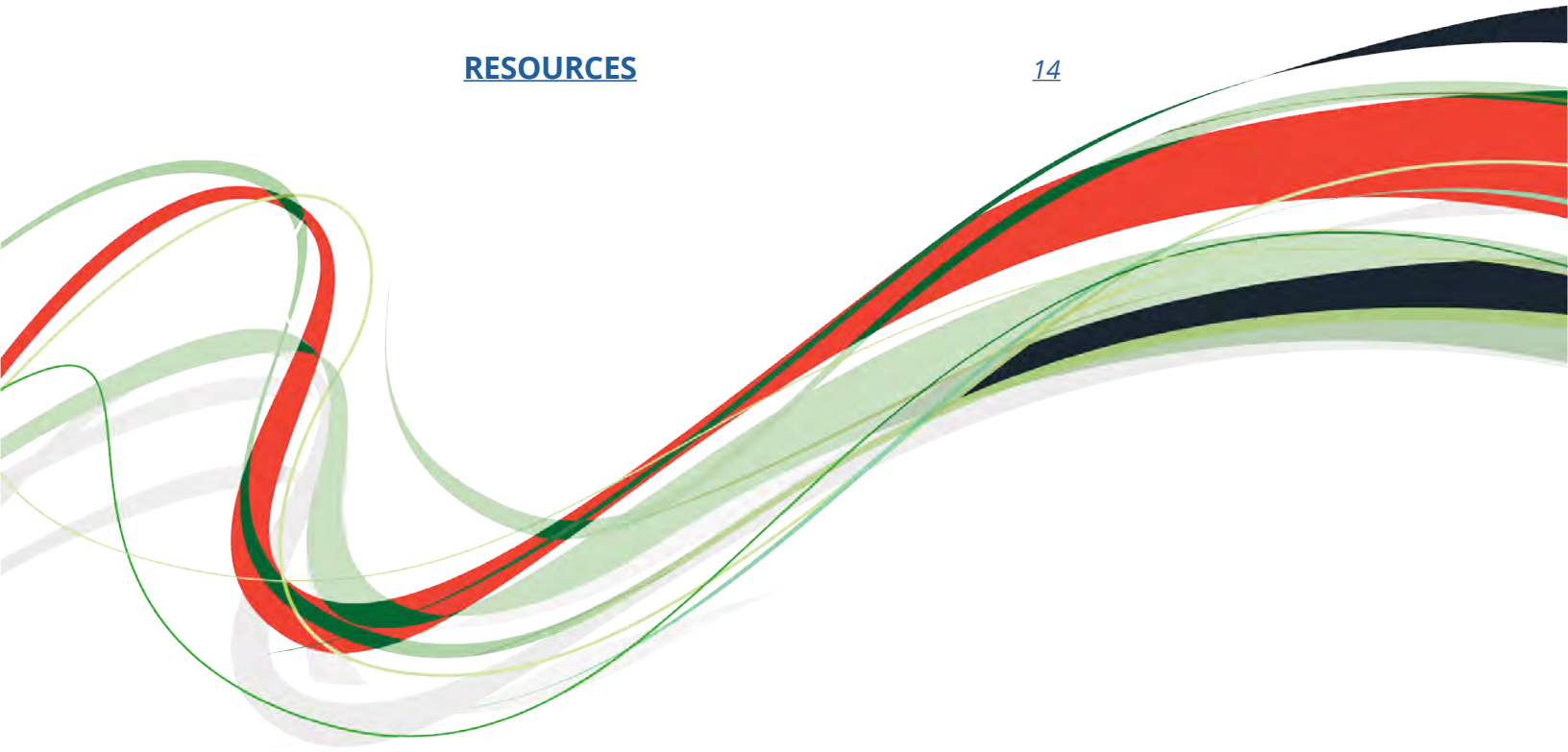
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EPA MID-ATLANTIC REGIONAL ADMINISTRATOR'S STATEMENT ON CLIMATE CHANGE ADAPTATION

August 1, 2022

CLIMATE CHANGE IS HERE.

Like many of you, I recall learning about greenhouse gases in elementary school – a time when shoveling the driveway for snow was a common winter chore and flooding was as rare as an east coast earthquake. Without a doubt, times have changed for us in the Mid-Atlantic Region, as it has for virtually every area of our world.

Some of EPA's 10 regions are experiencing too little water, leading to utility shortages, crop failure, and wildfires. Here in Region III, we have the opposite problem...too much water. Increases in extreme precipitation events can cause flooding that leads to destruction of property, devastation of livelihoods, and loss of life.

Recent news reports from the last year tell the tale: destructive floods in West Virginia and Philadelphia; tornados in suburban Maryland; saltwater intrusion contaminating drinking water throughout Delmarva; shifts in temperatures, rainfall, pests, and diseases affecting crop yields in Pennsylvania; temperatures in our cities making summer days not just unbearable, but unsafe; sea level rise eroding Delaware beaches, swallowing the Chesapeake's historic inhabited islands, and undermining the Navy's ability to conduct and support operations in Virginia, the largest naval base in the world.

The climate we had been accustomed to no longer a reliable guide for what to expect in the future.

And so, we are stepping up to our part to minimize the causes and safeguard our people and environment from its impacts, with a special emphasis on our most vulnerable communities.

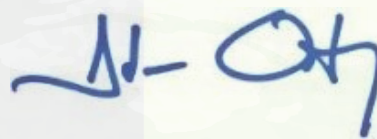
This Climate Adaptation Implementation Plan serves as Region III's response to President Biden's [Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad,"](#) and Administrator Regan's direction in [EPA's National Climate Adaptation Action Plan](#). Our plan incorporates climate adaptation into everything we do at EPA, while at the same time working to reduce greenhouse-gas emissions.

The plan has five overarching goals that guide our actions: 1) supporting community infrastructure and disaster resilience; 2) improving watershed and ecosystem health; 3) providing training and

outreach; 4) developing maps and tools; and 5) seeking innovation for program and decision support.

The plan describes over thirty adaptation actions under these goals including: ensuring municipal drinking water and wastewater facilities can withstand climate impacts; understanding how Superfund clean-ups along our coasts can adapt to more intense storm surges; promoting natural wetlands along rivers and bays to protect from surges and store carbon; and working with our partners to protect the Chesapeake Bay.

Above all, our plan is intended to be outcome and action oriented. We will track progress on the actions described in this plan and work closely with our partners to increase climate resilience for all. We invite you to join us in this effort, as we are all in this together.



Adam Ortiz
Regional Administrator

INTRODUCTION

Climate change is here. According to the U.S. Global Change Research Program, the Earth's climate is warming faster than at any point in the history of modern civilization, primarily because of emissions of heat-trapping greenhouse gases from fossil fuel combustion, deforestation, and land-use change. The impacts are on display every day across the nation: sea levels are rising; intense storms are becoming more frequent and extreme temperatures are continuing to break records. Each of these impacts has the potential to harm human health and the livelihoods of our communities, as well as damage critical infrastructure and ecosystems that serve us across the Mid-Atlantic region and the nation.

This document serves as the EPA Region III response to President Biden's [Executive Order 14008](#), "[Tackling the Climate Crisis at Home and Abroad](#)," and EPA Administrator Regan's direction to update regional Implementation Plans as stated in the [EPA 2021 Climate Adaptation Action Plan](#). This plan is intentionally designed to align with the [EPA's Strategic Plan \(FY2022-2026\)](#) to enhance EPA Region III's ability to support these strategic goals, and to facilitate our ability to report on progress related to those goals.

The EPA Region III Climate Adaptation Implementation Plan (CAIP) is intended to be a living document that will be updated annually to demonstrate progress toward priority actions designed to increase climate resilience across the region. This plan primarily focuses on adaptation, which means taking actions to prepare for and adjust to both the current and projected impacts of climate change. However, EPA Region III is also engaged in actions to address the reduction of greenhouse gas emissions (GHGs) in its climate mitigation efforts. These two concepts go hand in hand in combating the effects of climate change. As GHG emissions are lowered, it is hoped that efforts to reduce harmful impacts will be lessened, but until we can achieve significant global reductions in overall atmospheric carbon dioxide (CO₂), we must plan, prepare, and act to reduce harmful impacts that are already occurring at a record pace.

This plan recognizes that not only are our critical resources and natural ecosystems vulnerable to the effects of climate change, but certain populations and communities can be especially vulnerable to climate impacts.

The plan identifies key programmatic **vulnerabilities** and **actions** that will be taken to address the impacts of climate change over time. Priority actions are those that will be elevated for tracking by EPA’s Office of Policy and are identified in Chapter 3. Additional actions have been identified by lead programs and are described in Chapters 4-8. Each of the actions outlined in this plan generally falls under one of the five overarching goals established by EPA Region III as illustrated below.

Above all, this plan is intended to be outcome and action oriented. EPA Region III will track our progress on priority actions and monitor our ability to work with partners to achieve desired end states. The plan itself and actions contained within will evolve over time to ensure that we focus the Region’s resources where needed and that we deliver on our commitment to increase climate resilience for all as an integral part of our mission to protect human health and the environment in EPA Region III.



Figure 1 - EPA Region III Climate Adaptation Overarching Goals

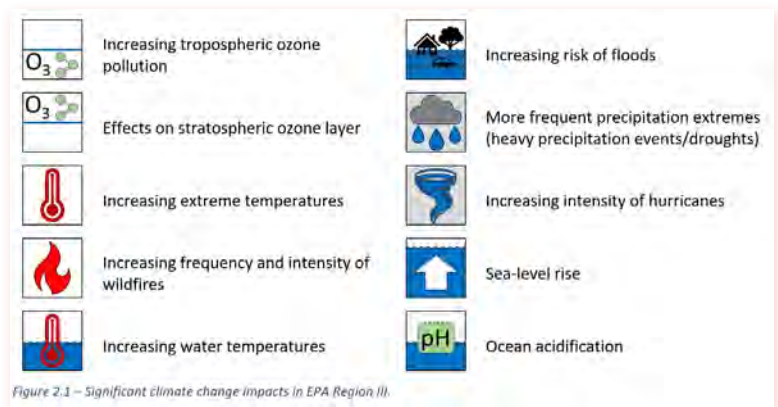
VULNERABILITY ASSESSMENT

The following is an assessment of the vulnerabilities of selected EPA Region III programs with respect to the impacts of climate change. It builds upon the work presented in Section 4 of EPA's 2021 Climate Adaptation Action Plan, as well as individual Climate Adaptation Implementations Plans developed by EPA National Program Offices, (e.g., Office of Air and Radiation, Office of Water, etc.), and it summarizes vulnerabilities related to the seven goals in EPA's FY 2022-2026 Strategic Plan as they relate to Goal 1: Tackle the Climate Crisis.

This vulnerability assessment also builds upon a previous assessment developed by EPA Region III in 2014. It has been updated for the current Climate Adaptation Implementation Plan to reflect advances in peer-reviewed science (climate impacts) and the professional judgment of regional staff (programmatic impacts). Vulnerability assessment is an ongoing process. This plan will be executed as a living document that will be updated as needed to account for new knowledge, data, and scientific evidence about the impacts of climate change on EPA's mission.

Climate trends in EPA Region III will have impacts on specific sectors and EPA programs. Significant

climate change impacts that pose a threat to EPA Region III include:



Climate Trends

Climate trends and sectoral impacts for EPA Region III are summarized from USGCRP's State Climate Summaries and the Fourth National Climate Assessment.

Temperature - Historically unprecedented warming is projected across the region by the end of the 21st century. The number and intensity of extreme heat events are projected to increase, while extreme cold waves are projected to be less frequent.

Precipitation - Across EPA Region III, winter and

spring precipitation amounts are projected to increase, as well as the number and intensity of extreme precipitation events, posing an increased risk of flooding.

Drought - Higher temperatures are projected to increase the rate of soil moisture loss during dry spells, resulting in more intense naturally occurring droughts in the future and adverse effects on agriculture.

Sea-Level Rise - Global sea level has risen by about 8 inches since 1880 and is projected to rise another 1 to 4 feet by 2100. Sea-level rise along the EPA Region III coastline has been much higher than the global rate.

Sectoral Impacts

Health Concerns - Environmental changes are expected to lead to health-related impacts and costs, including additional deaths, emergency room visits and hospitalizations, and a lower quality of life.

Natural Systems - Less distinct seasons with milder winters and earlier spring conditions are already altering ecosystems and environments in ways that adversely impact tourism, farming, forestry, biodiversity, and culturally important landscapes.

Coastal Systems - Warmer ocean temperatures, sea-level rise, and ocean acidification threaten commerce, tourism, and recreation that are important to the region's economy and way of life.

Agriculture - Agricultural productivity is threatened by changes in temperature and precipitation patterns, increased pest and disease pressures, decline in pollinator health, reduced crop and forage quantity and quality, and infrastructure damage, as well as water supply and increased frequency and intensity of extreme weather events.

Urban Environments - Major negative impacts on critical infrastructure, urban economies, and nationally significant historic sites are already occurring and will become more common with a changing climate.

Reducing Risks - Many communities are proactively planning and implementing actions to reduce risks posed by climate change. Experience gained through project implementation provides a foundation to advance future adaptation efforts. Furthermore, **reducing greenhouse gas emissions now reduces the need for climate adaptation measures in the future.**

Programmatic Impacts

Ensure Clean and Healthy Air for All Communities

- Meeting National Ambient Air Quality Standards is a primary goal of the air program, but 1) increased ground level ozone from warmer temperatures and weaker air circulation, 2) increased emissions due to energy demand, and 3) air quality impacts due to changes in the frequency or intensity of wildfires, can all present challenges to meeting those air quality standards. Extreme weather events may impact air monitoring systems, either through direct

damage or power outages. If air quality monitoring equipment is offline for any significant amount of time, the data to determine whether or not air quality standards are being met can't be collected. More frequent intense precipitation events and/or flooding can lead to mold and mildew growth, which has implications for indoor air quality, which in turn can have health impacts for the people occupying those spaces.

Ensure Clean and Safe Water for All Communities

– Climate change will have impacts on water quality and quantity. Higher air temperatures and shifts in precipitation patterns will cause changes to streamflow, water temperature, saltwater intrusion as well as to the frequency of harmful algal blooms, all of which complicates EPA's role in protecting and restoring America's water resources. Flooding from increasingly frequent intense storm events and sea-level rise can damage property and infrastructure and has links to the indoor air quality issues. Changes to water quality and quantity also have implications for the health of aquatic ecosystems and the composition and distribution of species.

Safeguard and Revitalize Communities – More frequent flooding and sea-level rise may increase the risk of contaminant releases from Resource Conservation and Recovery Act (RCRA) Corrective Action sites, Superfund sites, Brownfield sites, Leaking Underground Storage Tank (LUST) sites, other contaminated sites, and landfills. Sustainable Materials Management, including for food waste and disaster debris, can minimize climate and other environmental impacts. Reducing food waste

can offset agricultural productivity declines caused by climate change. Managing disaster debris in a sustainable way can both reduce the need for new materials and reduce the amount of material sent to landfills, which are themselves vulnerable to flooding that can mobilize contaminants.

Ensure Safety of Chemicals for People and the Environment

– Climate change will likely impact the timing and location of planting crops, which in turn affects the volume and timing of agricultural chemical use. This change in agricultural chemical use could impact risk management decisions made by EPA Pesticides and Toxic Substances Program, particularly with regard to the protection of migrant farm workers. Changes in temperature and precipitation are expected to lead to increases in mosquitoes and other pests controlled by regulated pesticides. An associated rise in cases of West Nile Virus and other diseases carried by mosquitoes may lead to greater public demand for use of pesticides to control these disease vectors.

Flooding from more frequent intense storms and extreme events could compromise chemical containment strategies at oil facilities and toxic chemical and pesticide storage facilities. Not accounting for climate change may result in the release of toxic chemicals into the environment, including to surface waters via storm water discharges. Extreme weather may damage community infrastructure (e.g., schools and childcare facilities) and residential homes. As a result, there may be an increased risk of exposure to lead, asbestos, and PCBs if buildings are renovated or demolished as part of the recovery efforts.

Enforce Environmental Laws and Ensure

Compliance – Climate change impacts the manner by which the Region prioritizes enforcement initiatives. It may also impact how EPA allocates resources, and affect the Region’s ability to inspect, monitor and ensure compliance with environmental laws; this includes the Region’s enforcement powers to address climate vulnerabilities and foster adaptation to changing climatic conditions.

EPA Region III Managed Facilities and Operations

– Threats from climate change include an increase in extreme temperatures, droughts, intensity of precipitation and ground level ozone pollution, which will affect EPA Region III employees and facilities. Impacts include increased exposure to indoor air quality problems in our buildings from dampness and mold, heat-related illnesses for employees doing fieldwork, the impact of more frequent flooding on transit systems, and increased energy costs during hotter summers.



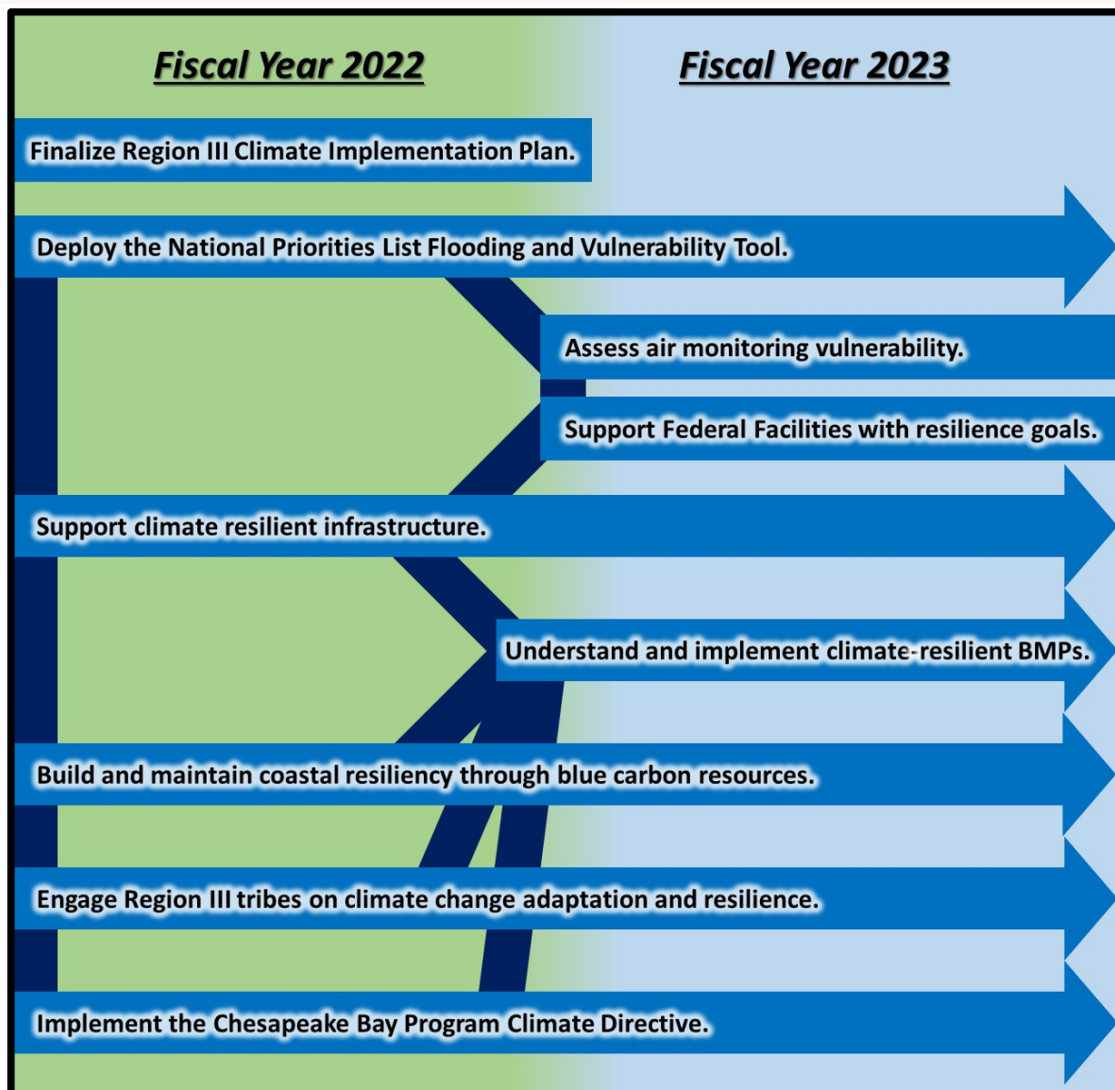
Flooding on the James River in Richmond, Virginia

PRIORITY ACTIONS

The Region 3 Climate Adaptation Implementation Plan is action-oriented, focusing on programmatic and cross-programmatic activities that bolster climate resilience in Region III environmental work.

Nine activities have been selected as Priority Actions for Fiscal Years 2022 and 2023.

Priority Actions reflect a cross section of ideas from programmatic and cross-programmatic chapters and are balanced between the five Overarching Goal Areas identified in the plan. They were also selected based on their synergies with other Region 3 climate actions and their support of other high-priority agency initiatives.



Finalize the Region III Climate Adaptation Implementation Plan.



Finalizing the Region III Climate Adaptation Implementation Plan is one of the Priority Actions for fiscal year 2022. It involved updating the 2014 climate vulnerability assessment, developing actions and Priority Actions for fiscal years 2022 and 2023, and coordinating across regions and national programs to eliminate overlap of effort and identify synergies.

Fiscal Year 2022

<i>Deploy the EPA Region III Climate National Priorities List (NPL) Flooding and Vulnerability Tool.</i>
Finalize, and deploy (including staff training) the newly developed joint ORD and EPA climate change mapping tool. This tool can be used to model and predict flood-related impacts on Superfund Sites for future events and in real time to measure effects of a current storm.
<i>Support climate resilient infrastructure.</i>
Build climate resilience into water, wastewater and stormwater infrastructure throughout EPA Region III by: <ul style="list-style-type: none">• Providing technical assistance and training to water and wastewater systems focused on capacity development, system optimization, climate resilience and operator certification.• Providing climate tools to states, local governments and water and wastewater systems to help mainstream adaptation and mitigation and encourage investments in resilient infrastructure.• Collaborating with state SRF programs to promote and encourage targeted outreach efforts toward financially distressed and disadvantaged communities and those that may be disproportionately impacted by climate change, leading to more climate resilient projects.• Encourage states to prioritize funding and technical assistance to disadvantaged communities that may be disproportionately impacted by climate change.
<i>Build and maintain coastal climate resiliency through Blue Carbon resources.</i>
Through this Action, CBPO, LSASD, WD and ORD will identify and actively engage with a community within the Chesapeake Bay watershed to: <ul style="list-style-type: none">• Understand the coastal climate adaptation and resilience challenges they face, and the information, science, and resources needed to address them.• Identify, analyze, and implement solutions incorporating blue carbon resources to address local challenges and related priorities.• Develop and transfer methods, approaches, data, or tools that can be used by the community to monitor and sustain resilient solutions.• As vulnerability to the impacts of climate change and the resources to address it are not equitably distributed, the chosen community will be a historically underserved or marginalized coastal community.
<i>Engage Region III Tribes in a meaningful dialogue on climate change adaptation and resilience.</i>
<ul style="list-style-type: none">• Host a standalone climate adaptation workshop for federally recognized tribes in FY2023.• Use the Regional Tribal Operations Committee (RTOC) as a forum for ongoing climate change adaptation information sharing, training, and capacity building.• Exchange information with the National Tribal Science Council on national tribal climate change adaptation needs and directions, as appropriate.• Support and encourage the use of General Assistance Program (GAP) grants, and other available funds for climate change adaptation, as particular funds allow (e.g., education of staff and members, assessing their community and environment, and developing climate change adaptation plans).

Implement the Chesapeake Bay Program Climate Directive.

The CBPO will provide core management, scientific, facilitation, technical, and staffing support to build capacity of CBP to prepare for and respond to climate change and advance core elements of the Climate Directive:

- Address threats of climate change in all aspects of the work by integrating science and adaptation.
- Prioritize communities and habitats most vulnerable to ever increasing risks.
- Apply the best scientific, modeling, monitoring, and planning capabilities of the Chesapeake Bay Program.
- Connect Chesapeake Bay restoration goals with emerging opportunities in climate adaptation, mitigation, and resilience.

Fiscal Year 2023

Assess air monitoring vulnerability.

Evaluate EPA Region III's Ambient Air Monitoring Infrastructure to identify which sites may be vulnerable to flooding, extreme weather, or other climate impacts, and create a plan of action to address these vulnerabilities.

Support climate resilient infrastructure.

Federal Facilities Enforcement (FFE) has been difficult to achieve in a timely manner, and negotiations are protracted. The targeting of federal facilities located in areas that could be subject to resiliency goals, such as those located in river valleys or in coastal areas may be able to support resiliency plans for sea-level rise and worsening flooding, as a supplement to monetary penalties. Many federal facilities are located in non-attainment areas where the use of emergency generators in the summer ozone season may have an increased impact on air quality and climate health. Chemical storage upgrades provide opportunities in low lying areas that may be another area for resiliency to combat sea level rise and worsening flooding.

Advance understanding and implementation of climate-resilient Best Management Practices (BMPs).

Further data and research are needed to understand the climate change impacts and adaptation options on BMP performance. There is currently limited data on BMP climate resilience (i.e., pollutant removal performance, maintenance, shelf life, siting and design) and adaptation co-benefits for living resources and habitat. Working closely with Chesapeake Bay Program partners, the Chesapeake Bay Program Office will take steps to develop a better understanding of BMP responses, including new and other emerging BMPs, to climate change conditions and support implementation of climate adapted BMPs.

The Region 3 Climate Adaptation Implementation Plan is action-oriented, focusing on programmatic and cross-programmatic activities that bolster climate resilience in Region III environmental work. Nine activities have been selected as Priority Actions for Fiscal Years 2022 and 2023.

RESOURCES

For more information and to view the complete Climate Adaptation Implementation Plan, visit:

[U.S. EPA Mid-Atlantic Region Climate Adaption Implemenation Plan \(full document\)](#)

[Climate Change at EPA](#)

[Climate Change Adaptation Resource Center \(ARC-X\)](#)

[2021 EPA Climate Adaptation Action Plan](#)

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