

Climate and Resilience Support Best Practices for Resilient Utilities

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The Environmental Finance Center (EFC) at the University of Maryland advances finance solutions to environmental challenges. With more than 25 years of experience, we work with communities to protect natural resources by strengthening the capacity of decision-makers to assess needs, develop effective financing methods, and catalyze action.

COMMUNITY OUTREACH | FACILITATION

EDUCATION | TRAINING | TECHNICAL ASSISTANCE

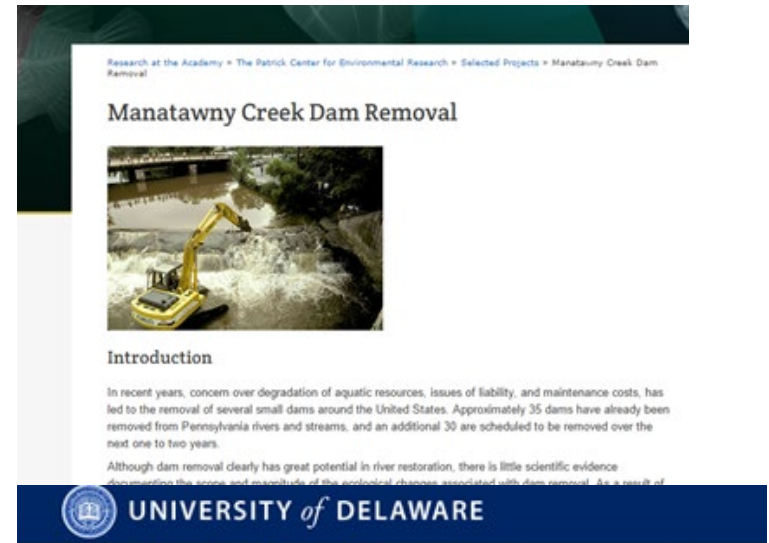
RESEARCH | POLICY ANALYSIS | FINANCIAL ASSESSMENT



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University of Maryland Environmental Finance Center

- BS/MS Geology – Stream Geomorphology
- PhD - Water Science and Policy
 - *Economic and Institutional Analysis
 - *Water Quality Trading in the Chesapeake Bay
- Environmental Consultant – Water Resources
- Non-Profit Management – White Clay Wild and Scenic Program
- **University of Maryland – Conservation Finance**
- **UD Adjunct – Applied Economics**



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Climate Resilience Support

- Development of and dialogue about climate resilience
- What are EFC projects that support utilities and communities in the Delaware River Basin?
 - EPA funded
 - WRF utility guidance projects
- Challenges in the DRB – funding, finance, climate
- Climate Resilience Planning Support
 - EPA funding
 - EPA tools





Region 3 WaterTA Program

The Region 3 Water Technical Assistance (WaterTA) program is offering direct support to municipalities, tribes, and water utilities in US EPA Region 3 to help them access federal and state funding to address water infrastructure needs. This assistance will be delivered over the coming five years at no cost to recipients, through an award from the US Environmental Protection Agency. Assistance is available on a need basis, with priority given to historically underserved and disadvantaged communities.

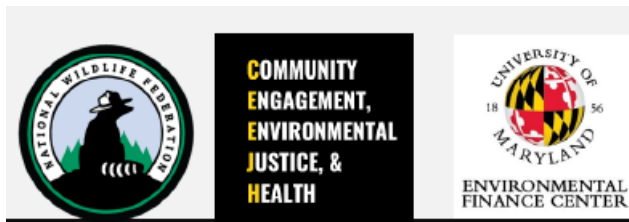


Region III Technical Assistance Center (TCTAC)



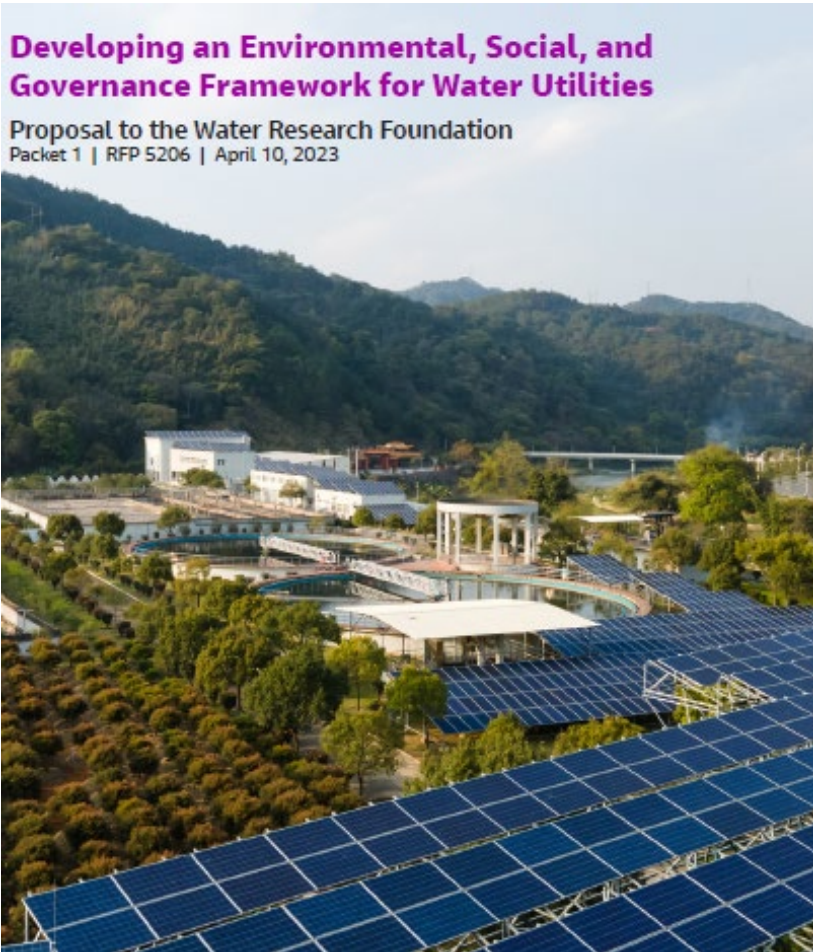
Provide technical assistance and outreach to underserved, overburdened, rural, and capacity-constrained communities in Region III to:

- **Increase the capacity** of HBCU Hubs and communities with environmental and energy justice concerns.
- Deliver **training and technical assistance** to increase the capacity of underserved, overburdened, rural, communities and obtain funding to address environmental and energy justice issues.
- Deliver support to HBCU Hub and communities **to engage policymakers**, government agencies, and industry in projects, programs, and initiatives that will address local environmental and energy justice issues.



Water Research Federation (WRF) Project Advisory

Upcoming WRF projects for water utilities



I) ESG Framework for Water Utilities

- To develop a water-sector-specific environmental, social, and governance (ESG) framework, and address related topics
- To prepare a user-friendly ESG framework report with synthesis of case studies for water



What is ESG?

- Environmental, Social, and Governance (ESG) reporting discloses non-financial risks and opportunities inherent to a utilities activities.
- Utilities, for example, must provide safe and reliable potable water, treat wastewater, manage stormwater, and preserve and protect this resource amid ever-changing regulations and budgetary constraints.
- ESG guidance will enable many utilities to address urgently needed capital projects that address ESG-related considerations and to take advantage of alternative funding sources like the Bipartisan Infrastructure Law.



Why ESG for Utilities

Identifying and managing ESG risks, as well as reporting on them publicly for investors and/or stakeholders, provides a range of benefits to a utility and planning for the future.

3 pillars of ESG



<https://www.techtarget.com/whatis/definition/environmental-social-and-governance-ESG>



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ESG Water Key Considerations

- Infrastructure management
- Climate mitigation and adaptation
- Water Supply Security
- Water-energy nexus and energy transition
- Digital/Intelligent water systems
- Circularity (reuse water, biosolids, biogas)
- Land use planning
- Education and Behavior
- Management of Customers
- Emerging Contaminants

“ESG goals create a **solid framework for building a resilient and sustainable water infrastructure.** The positive economic and social impact that doing it right will have on the **future of water stability, resiliency, and sustainability** is immeasurable.”

Bureau, M., 2021. How ESG Goals Can Help Drive Resilient Water Asset Management <https://www.watercanada.net/sponsor/how-esg-goals-can-help-drive-asset-management/>



Water Research Federation (WRF) Project Advisory

Upcoming WRF projects for water utilities

2) Making the Case for Climate-Resilient Water Infrastructure and Supporting Strategies

- To develop guidance and a decision-support tool on how to make a **case for investments in climate-resilient stormwater, wastewater, and drinking water infrastructure**, considering both structural approaches (i.e., physical assets) and nonstructural approaches (e.g., codes and standards).
- To advance quantitative approaches to utility **decision-making about climate-resilient capital projects**, as well as other approaches within the web of complex challenges facing water utilities today.
- To enhance stakeholder engagement and education by incorporating a collaborative component in the decision-support tool, enabling **utilities to engage community members, utility staff, and peer agencies** around climate-resilient water investments.



REQUEST FOR PROPOSALS (RFP)

Making the Case for Climate-Resilient Water Infrastructure and Supporting Strategies (5222)



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On-Going Challenges in the DRB

- Dams
- Water pollution
- Overfishing
- Funding and finance for conservation, restoration, utility investments.



With many funding sources for water why is this still such a challenge?

State funding for utility investments is (primarily) low-interest loans for drinking water and “clean water.”



DRVPC Funding Improvements

- Report on how municipalities and utilities currently view infrastructure needs and funding programs.
- 20 structured interviews with municipal and utility managers in Southeastern Pennsylvania from Philadelphia, Bucks, Chester, Delaware, and Montgomery counties, as well as managers in adjacent systems within the Delaware Basin.

Key Takeaways:

Utilities still struggle to identify appropriate funding sources, engage the community, and work through the application process itself.

“An EPA report points to PENNVEST’s model as a best practice in regards to streamlining the application and speeding up the process, but interviewees indicated that improvements are still necessary to alleviate the burden placed on applicants, particularly small and under-

resourced systems.” See U.S. EPA, *AWIA Best Practices for Administration of Drinking Water State Revolving Funds*, (Washington D.C.: US EPA, 2022). https://www.epa.gov/system/files/documents/2022-04/awia-best-practices-for-administration-of-drinking-water-state-revolving-funds_2.pdf



Increased Complexity

Increasing vulnerability and risk:

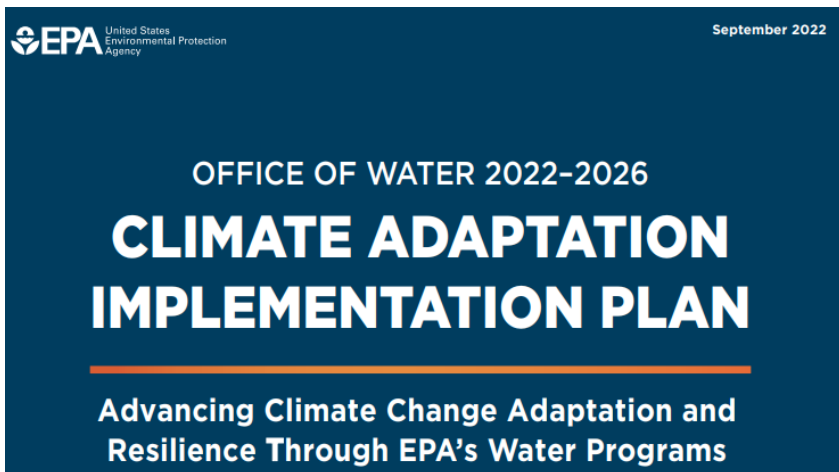
Waterborne Illness and Water Treatment Needs

Aquatic Ecosystem Health

Overburdened, Underserved, and Disadvantaged Communities

Critical Water Infrastructure

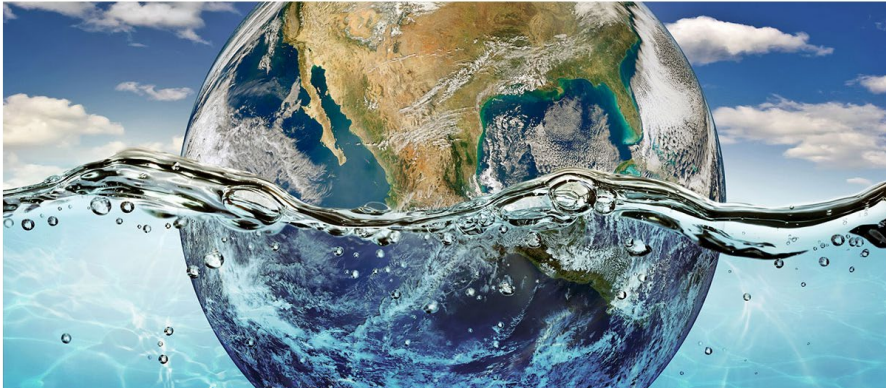
- Increasing standards
- Failures due to natural disasters reduced quantity in some areas
- Stormwater control failure
- Invasive species
- Advanced treatment for emerging contaminants
- Outdated systems and increased demand



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Climate and Resilience Planning

 Water Utility Climate Alliance



EXTERNAL VERSION – PLEASE SEE DISCLAIMER BELOW

PHILADELPHIA
WATER
— DEPARTMENT —

Climate-Resilient Planning and Design Guidance

Building Our Future Today

Version 1.0

January 2022

Federal funding for “...climate resilience and mitigation (more than \$500B over a decade)...the need far outweighs funding to date...(https://www.wucaonline.org/)



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PWD Climate and Resilience Planning

Table 2-1 Matrix inventory of the projections, tools and prescriptive requirements.

		Definitely relevant	Potentially relevant	Not relevant					
	Guidance Section, page #	Capital projects*	Water Master Planning	WW Master Planning	CSO Planning/LTCPU	MS4 Planning	Water Supply Planning	Flood Risk Management	Risk Assessments or Sensitivity Analyses**
Sea Level Rise									
Projections (NOAA 2017)	4-24								
Future tidal datums	4-27								
Future storm surge and storm tide elevations	4-28								
Current and future floodplain mapping tool	4-29								
Changing flood frequency calculator	4-30								
Interceptor sewer and regulators tool	4-32								
Design flood elevation (prescriptive req.)	4-34								
Adaptive management plan (prescriptive req.)	4-36								
Precipitation									
Projections (RCP8.5)	5-54								
Future IDF curves and design storms	5-57								
Future hourly & sub-hourly time series	5-58								
Stochastic rainfall generator tool	5-58								
Air Temperature									
Projections (RCPs 4.5 and 8.5)	6-73								
Changes in extremes and average conditions	6-77								

*includes new assets and renewal/replacement of existing assets; includes capital projects above AND below \$2M threshold

**various assessments apply; if dealing with climate-related risks, will likely be led by CCAP

The matrix contains projections, tools and prescriptive Requirements. For each of the major PWD programmatic and project-based planning and design groups, the information is categorized as follows: definitely relevant, potentially relevant or not relevant.



Funding for Climate Resilience

Scaling and Application of Climate Projections to Stormwater and Wastewater Resilience Planning



“Utilities, in collaboration with relevant stakeholders and local, state and federal partners, will need to identify sustained sources of funding and revenue generation that allow the flexibility needed to respond to emergencies and proactively prepare for future climate conditions.

Limitations in regard to raising customer rates, devoting resources to grant applications and management, and the scale of continued investment needs must be considered.”

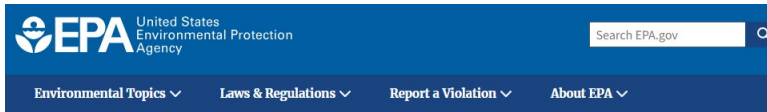


<https://www.wucaonline.org/assets/pdf/stormwater-wastewater-report-2022.pdf>



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Funding for Climate Resilience



CONTACT L

Water Infrastructure and Resiliency Finance Center



EPA Funding that Supports Climate Adaptation

EPA has modernized the financial assistance programs below to encourage climate-resilient investments. Each of these programs now incorporate specific criteria, allow for adaptation planning, or otherwise encourage communities to anticipate, plan for, and adapt to the changing climate.

Sustainable Water Infrastructure



***Climate Adaptation Finding for Water Sector Utilities**

***Creating Resilient Water Utilities (CRWU)**

***Climate Resilience Evaluation and Awareness Tool (CREAT)**



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Creating Resilient Water Utilities

12/15/23, 2:17 PM

WebRSG Report



Report: Resilient Strategies Guide for Water Utilities

This report is provided to help identify and organize adaptation options of interest. Use the information documented in this report as a preliminary step in the process of planning and building resilience strategies. As you continue to monitor conditions and begin implementing resilience options, revisit the Resilient Strategies Guide and revise this report accordingly to inform future planning efforts.

Utility Information

Utility Type: Combined

State/Territory: Pennsylvania

The Resilient Strategies Guide is generated from utility selections such as

- Priorities (e.g., coastal flooding, water demand energy demand)
- Assets (e.g., collection and distribution, treatment plants, streams and rivers)

And provides

- Strategies for asset protection and
- Funding Sources



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What are Opportunities for Climate Planning and Utilities?

Playbook 1.0: How Cities Are Paying for Climate Resilience

Peter Plastrik, Joyce Coffee & John Cleveland
Innovation Network for Communities & Climate Resilience Consulting



July 2019

- No federal/state framework exists to support city resilience.
- Most investment does not have a return-on-investment that can attract private capital.

- Who pays? Need to determine which financial costs are being borne by the public sector, which by the private sector? More specifically, which by **city government taxpayers, utility-service customers, businesses, or private property owners/developers in the city?**
- Which financial mechanisms? Which financial mechanisms will city government use to obtain or **leverage the needed public funding and private financing** and what does the city have to do—e.g., win voter approval, mandate private property resilience standards—to use them?



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What are Opportunities?



"This really is an innovative approach, but I'm afraid we can't consider it. It's never been done before."



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**Discussion:
What are the Opportunities for Climate Resilience Planning and Finance in
the DRB?**

Questions

... other ideas from the committee?



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