



Pittsburgh Unifies its Approach to Updating Stormwater Management

When city planners realized the majority of their water quality and flooding issues were all symptoms of ineffective stormwater management, they eliminated departmental silos and adopted an integrated plan closely tied to how the city grows.

Case Studies › Pittsburgh Unifies its Approach to Updating Stormwater Management ›

Lessons Learned

- Bring everyone to the table: Inclusive engagement is essential for effective climate resilience building. This project highlights early and frequent engagement as the best way to avoid future conflict and guarantee project success.
- Break barriers to cultivate cohesion: Dismantling silos fosters nuanced comprehension and the integration of diverse perspectives, empowering robust resilience planning.

Equity Insights

This group embarked on a comprehensive initiative to address stormwater flood and water quality issues while prioritizing procedural and distributional equity. The initiative developed a scalable implementation plan to tackle stormwater flooding in neighborhoods, emphasizing equity and affordability. The group introduced a fair fee structure to fund flooding resilience projects, demonstrating a commitment to fair distribution of costs and benefits.

They also convened a stormwater advisory group to ensure the development of an equitable stormwater rate plan, engaging community and stakeholder groups in the decision-making process. By involving diverse stakeholders and incorporating community perspectives, the initiative upheld procedural equity. Additionally, the focus on addressing stormwater challenges in underserved neighborhoods underscored the commitment to distributional equity, ensuring that resources and benefits are shared fairly.

▼ [Click to read the full case study↓](#)

Stormwater infrastructure shows its age

Pittsburgh, located in southwestern Pennsylvania where the Allegheny, Monongahela, and Ohio Rivers meet, is known for its steel town heritage and its diverse culture. In the early 1900s, the city extensively improved its infrastructure to support the growing metropolitan area by installing underground sewers and water lines, as well as new power lines and roads.

Similar to other industrial cities in the Midwest, Pittsburgh experienced deindustrialization later in the 20th century and then a resurgence in population as the city grew. Aging infrastructure and changing land use that increased impervious area combined with more frequent and intense rainstorms and other impacts of climate



Overflowing storm drain and street flooding.

change resulted in more sewer overflows, surface flooding, basement sewage flooding, and poor water quality.

The Pittsburgh Water and Sewer Authority (PWSA), under the direction of Sustainability Manager James J. Stitt, began looking for solutions to its stormwater management challenges that maximized both community and economic benefits and emphasized equity and affordability.

Planning the project...and how to pay for it

Evaluation of the stormwater management system spawned a scalable implementation plan to address overflow and flooding. The first neighborhood selected was Centre and Herron—identified as a priority neighborhood for combined sewer overflow management as well as for sediment and erosion control. The Little Negley Run neighborhood was also selected to mitigate flooding of a roadway and restore a

historic stream. The plan included the Saw Mill Run Integrated Watershed Plan, which utilizes green and gray infrastructure to achieve water quality goals.

Stormwater management projects of this magnitude don't come cheaply, so the city moved to create an impervious-area fee structure to raise needed revenue. In 2019, PWSA convened a stormwater advisory group to engage community and stakeholder groups to ensure development of an equitable stormwater rate plan.

The project included surface mapping of pervious, paved, and permeable areas to establish a fee structure for the impervious area. PWSA also made various permitting process and code improvements, most notably unifying all stormwater codes in one section, instituting an internal policy review process, and coordinating stormwater processes across all jurisdictions. PWSA updated their guidance manuals, improved their defined Level of Service, and is now exploring credit and rebate programs to incentivize green infrastructure and removal of impermeable surfaces on private lands.



A section of the Centre and Herron stormwater project.

Many issues from a single root cause

The primary lesson learned from the reevaluation of Pittsburgh's stormwater management system was that all of the observed water quality and quantity issues—including combined sewer overflows, sanitary sewer overflows, stream bank erosion, surface flooding, basement backups, and water quality degradation—were symptoms of a single root cause: ineffective or outdated stormwater management.

Once planners eliminated the silos of trying to address each symptom on its own, a plan for true integrated stormwater management was the only feasible option. It also became clear that stormwater management was very much a land use issue and must be closely tied to how the city continues to grow and build out the places to live, work, and play. That, along with public desire to participate, drove the subsequent decision to involve the community in the process of addressing the stormwater issues that most impacted each neighborhood.

While the city still constructs much of its infrastructure underground and out of sight, many of the solutions include above-ground, ecologically engineered techniques that must become part of the neighborhood fabric.

Sustaining progress over time

In May of 2022, the updated Pittsburgh stormwater ordinance was put into effect. This involved the creation of a stormwater permit and inspection process for all developments meeting the designated threshold, along with the publication Stormwater Design Manual to act as a supplement to the code for applicants. The team has been successfully reviewing these permits and has issued three in the year the program has been online.

Relevant Options

This selection of resilience actions from our Options Database is specifically tailored to address the hazards and assets identified in this case study. To explore other resilience actions that may be applicable to your community, visit the complete Options Database.



Banner Image Credit
Pittsburgh skyline during the day, taken from Mt. Washington. By Chych at English Wikipedia, CC BY 3.0,
<https://creativecommons.org/licenses/by/3.0>, via Wikimedia Commons

*Last modified*10 May 2024 - 12:01pm

Steps to Resilience

This content supports the highlighted step.

- (

Started
- U

erstand Exposure
- /

s Vulnerability & Risk
- I

tigate Options
- F

ize & Plan
- 1

Action

Hazards

[Flooding – Rainfall-induced ›](#)

[Water Quality ›](#)

Assets

[Natural Areas and Wildlife ›](#)

[Property ›](#)

[Transportation and Mobility ›](#)

[Urban Landscape and Tree Canopy ›](#)

Additional Resources

[Adapting Stormwater Management to a Changing Climate in the Mid-Atlantic and Urban Northeast Regions \(PDF\) ›](#)

[How to control flooding in Pittsburgh? Green stormwater management projects like this one will help ›](#)

[Robust Stormwater Management in the Pittsburgh Region: A Pilot Study ›](#)

Partners

[Pittsburgh Water and Sewer Authority ›](#)