

## **Civic Innovation Hub Supplemental Materials**

### **A. Stormwater 101**

1. EPA Definition of Green Infrastructure
2. Stormwater system when wet (Friends of the Chicago River)
3. Stormwater system when dry (Friends of the Chicago River)
4. “Green stormwater projects less likely in Black neighborhoods”

### **B. Community Organizing for Stormwater 101**

1. Organizers Handbook selection
2. Mutual Aid
3. Cook County Resilience Hubs (Harvey World Herald article)

### **C. Asset Mapping**

1. Assets Worksheet
2. Satellite Map of Community
3. Street Map of Community

### **D. Municipal Planning and Financing**

1. MWRD July 2-3, Storm Follow Up Email
2. Introduction to Increasing Funding & Financing Options for Sustainable Stormwater Infrastructure
3. Introduction to Equitable Water Infrastructure Toolkit
4. How to access the full reports

July 5, 2023

## July 2-3, 2023, Storm Follow-Up

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) works around the clock to provide flood protection for Cook County while protecting our greatest asset, the source of our drinking water, Lake Michigan. We monitor the weather, and prior to major storms, we draw down the waterways to provide maximum capacity in the waterways, tunnels and reservoir system.

However, when there is an extreme weather event such as what happened July 2 and 3, we must reverse the flow of the Chicago River when the river level exceeds the elevation of Lake Michigan. During this past weekend's storm, the elevation of the North Shore Channel topped the elevation of Lake Michigan, and we opened the gates at 2:16 p.m. on July 2. The gates remained open until 9:47 p.m. on July 2. The elevation of the Chicago River downtown exceeded Lake Michigan's elevation so the locks were opened at 4 p.m. on July 2 and the reversal ended at 2:30 a.m. on July 3. Reversing to the lake only happens in extreme situations. Reversals dating back to 1985 are listed at this link: [https://mwrdd.org/sites/default/files/documents/Lake\\_Michigan\\_Reversals\\_0422.pdf](https://mwrdd.org/sites/default/files/documents/Lake_Michigan_Reversals_0422.pdf)

In other words, when the Chicago area waterway levels are higher than Lake Michigan, only then can the MWRD open control structures to move as much water as possible out of the system. We cannot open the gates and lock before that time. There is NO MAGIC KEY OR BUTTON to use at will. Opening the gates and lock not only provide overbank flooding protection but they allow for more capacity for stormwater. **As a result, the MWRD can only reverse the waterway to the lake when the river level is ABOVE Lake Michigan levels. If we were to open the lock and gates too early, Lake Michigan would have a tsunami effect, overtaking the river and flooding everything in its path in downtown Chicago and along the waterways, totally decimating the riverwalk and municipalities downstream, on the South side and on the North side. The destruction that would be caused by opening the gates and lock too early is unimaginable.**

According to the National Weather Service, "rainfall totals in and in the immediate vicinity of Chicago ranged from roughly 3 to 7 inches, though a few localized areas received over 8 inches of rainfall. The worst of the flooding occurred on the west and southwest sides of Chicago and in the near west and southwest suburbs." This includes Cicero and Berwyn. There is no system able to handle that much water in just a few hours. [https://www.weather.gov/lot/2023\\_07\\_02\\_Flooding](https://www.weather.gov/lot/2023_07_02_Flooding).

Consistent with the MWRD's mission of protecting Lake Michigan from pollution, every effort is made to minimize the amount of floodwater discharged to the lake during extreme storms. In a combined sewer system like we have here, sanitary sewage and stormwater drain into the same pipes. Homes, businesses and street drains are connected to the local sewers, which are owned and maintained by municipalities. Local sewers flow by gravity into the MWRD intercepting sewers, which then convey the flow to MWRD water reclamation plants for treatment.

To combat this, we have partnerships with municipalities and other organizations throughout the county to fully or partially fund green infrastructure and other stormwater projects to improve resilience within that community. The 34 Space to Grow@ green infrastructure projects that

convert asphalt into permeable surfaces at local schools is just one example of a partnership improving communities one neighborhood at a time.

Here are some links that provide additional information and explanations about how the MWRD's infrastructure and waterway system operate.

#### **Information about the tunnel and Reservoir Plan (TARP)**

<https://mwrld.org/tunnel-and-reservoir-plan-tarp>

#### **Here is a link to understand how the Chicago Area Waterway System works**

<https://mwrld.org/chicago-area-waterway-system>

#### **Here is more information about how to prepare for stormwater**

<https://mwrld.org/flood-prevention-101>

**We created a booklet about understanding how sewers work – we also have this as a PowerPoint presentation that we present to communities and organizations**

<https://mwrld.org/understanding-your-sewer>

**We offer a live virtual tour once a month, there is a recorded version plus we give thousands of people locally and from around the world tours of our facilities, including the TARP pumping stations and reservoir**

<https://mwrld.org/facility-tours>

We would be happy to provide a presentation to your group or a tour of our operations and facilities to answer any and all questions. Please contact [forea@mwrld.org](mailto:forea@mwrld.org) for additional information or to schedule a tour.

###

Metropolitan Water Reclamation District of Greater Chicago | [100 E. Erie Street, Chicago, IL 60611](https://www.mwrld.org)

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# INCREASING FUNDING AND FINANCING OPTIONS FOR SUSTAINABLE STORMWATER INFRASTRUCTURE



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## EXECUTIVE SUMMARY

Our nation's stormwater and wastewater infrastructure is aging and in a poor state of repair. It is increasingly threatened by climate change, which will cause more frequent and severe storms, leading to greater flood risk. Traditional public funding and financing methods for stormwater infrastructure provide limited options and are insufficient to address current problems. At the same time, views on flooding are changing, with increased recognition of urban flooding and the need for distributed infrastructure to manage it.

Thus, new ideas are needed to introduce innovative approaches to sustainable water infrastructure investment by both the public and private sector. This white paper examines a variety of options:

- Reform State Revolving Funds (SRFs), which are potentially powerful mechanisms for resilient and equitable stormwater investment but are typically not used to their full potential in terms of their ability to provide grants or offer forgivable loans.
- Use value capture techniques like Tax Increment Financing (TIF) or Special Service Areas (SSAs) to take advantage of the positive property value impacts of green infrastructure like trees and parks.
- Increase the ability of stormwater utilities and local governments to make public stormwater investments on private property, which is often the most cost-effective approach, and change stormwater regulations to establish fee-in-lieu programs or stormwater credit trading to drive infrastructure investment to the most beneficial areas.
- Combine existing separate funding streams for energy efficiency, weatherization, flood prevention, lead abatement, and other healthy homes investments to create comprehensive housing rehabilitation funding programs.
- Develop a strategy to unlock private property investment for stormwater management by improving understanding of flood risk and how this risk can be reduced with certain investments.

The field of stormwater funding and finance should take lessons from the energy efficiency field, which is far more developed and demonstrates the use of many relevant mechanisms. In energy, the use of public funds for investments on private property is a common practice, and financing methods have been developed to spark private capital investment.

Financial barriers are certainly not the only challenge to increased sustainability of water infrastructure. Other challenges – like fragmented ownership of water systems, incomplete recognition of the broader set of community benefits created by green stormwater infrastructure, outdated regulations, and low capacity at many local governments and utilities – also present significant barriers. While recognizing these barriers, this paper focuses on funding and financing challenges and solutions.

CNT hopes that this document sparks discussion and consideration by several key groups. These include implementers, including municipalities and stormwater utilities; financial institutions, including Community Development Financial Institutions (CDFIs) and other mission-driven investors; the real estate industry, including realtors, appraisers, and developers; the insurance industry; and others

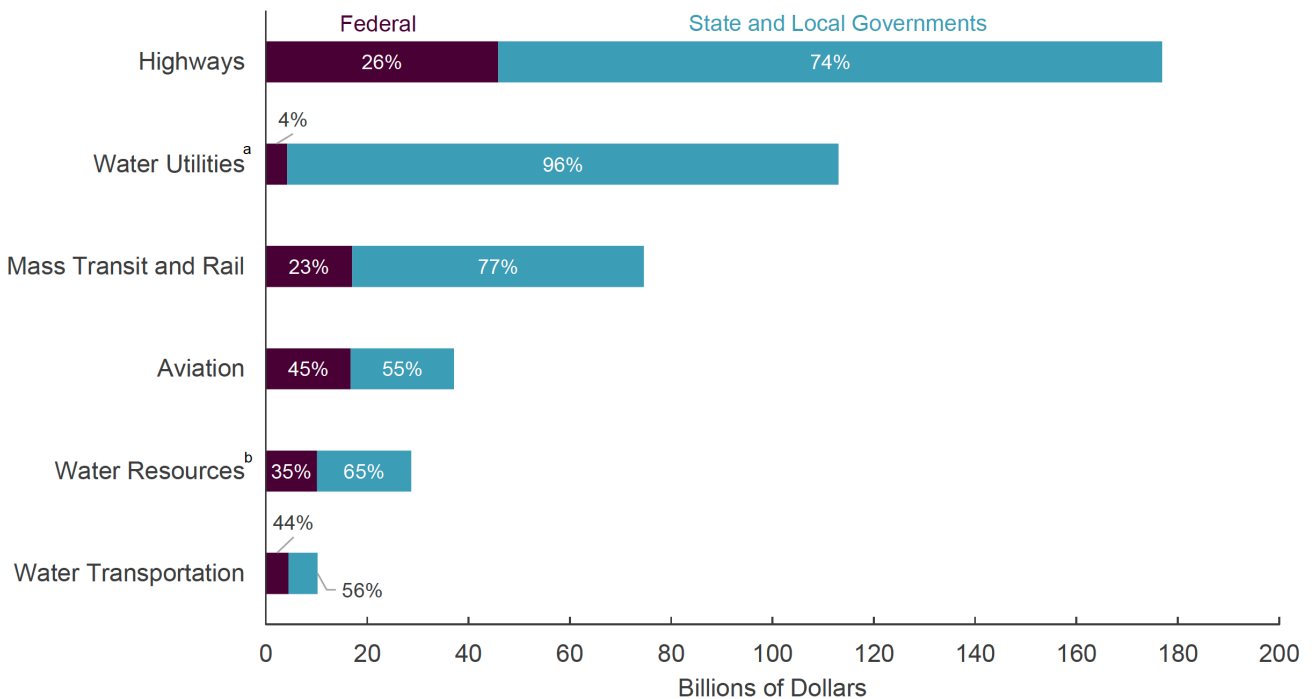
# CURRENT STORMWATER INFRASTRUCTURE FUNDING AND FINANCING

Funding (the money to pay for infrastructure) and financing (the tools to provide funds) are major roadblocks to the implementation of innovative, sustainable, and efficient infrastructure around the U.S. The balance of funds used for infrastructure financing varies by project type. Figure 1 shows the level of investment by federal, state and local governments in various infrastructure types.

As this demonstrates, states and local governments are the primary funders of water utility infrastructure, spending \$109 billion per year compared to only \$4 billion by the federal government. This has proven dangerous in states with fiscal problems, as more responsibility is pushed to the local level; this is especially true for municipalities with limited budgets and aged water infrastructure. All of this is putting pressure on local governments and utilities, which have faced shrinking state and federal support, to get more done with fewer resources. Without innovative and suitable financing opportunities that fit within municipal budgets, municipalities are left to make reactive infrastructure investment decisions.

Infrastructure has always required dedicated funding and special financing mechanisms. Communities have traditionally paid for infrastructure projects with capital budgets, bonds, state and federal grants and loans, and private loans. Borrowed money is typically paid back through taxation or user fees. For example, a stormwater upgrade bond may be paid back over time by fees on water and sewer bills. Interest rates have been at historic lows for the past several years following the economic downturn, which has benefitted borrowers and has led local governments with sufficient revenue to take advantage of those low rates with new bonding issuances. However, in many cases, the barrier to investment locally is a gap in funding: some local governments simply lack the revenue stream to repay bonds or loans, regardless of the specific mechanism used. In this context, innovative ideas for funding and financing are necessary.

Figure 1. The Federal Government's and State and Local Governments' Spending on Transportation and Water Infrastructure, by Type of Infrastructure, 2017



Source: Congressional Budget Office, using data from the Office of Management and Budget and the Census Bureau.

a. Includes water supply and wastewater treatment facilities.

b. Includes water containment systems (dams, levees, reservoirs, and watersheds) and sources of freshwater (lakes and rivers).



# EQUITABLE WATER INFRASTRUCTURE TOOLKIT



**river**  
**NETWORK**  
connecting people  
saving rivers





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# Infrastructure

## Objectives

- Realize the effect that aging, neglected water infrastructure has on water affordability
- Understand how federal, state, and local governments pay for water infrastructure
- Identify which government programs can be used to fund infrastructure projects
- Learn about federal legislative efforts that support affordability and equity outcomes

## What is Water Infrastructure?

Water infrastructure refers to the network of pipes, tunnels, pumping stations, and treatment facilities that collect, clean, and transmit drinking water to our homes, and collect, clean, and discharge wastewater back into the environment.

Beyond these conventionally recognized components of a water system network, there are other tools, technologies, and techniques that serve to manage, supply, protect, and conserve water: rain gardens, smart meters, drought-tolerant landscaping, efficient appliances, groundwater aquifers, etc. These advancements, practices, and efforts should be recognized as distributed infrastructure.

1 Koehler, C. (2018, May 16). *Financing the Future of Water Infrastructure Just Got a Whole Lot Easier*. WaterNow Alliance. <https://waternow.org/2018/05/16/financing-the-future-of-water-infrastructure-just-got-a-whole-lot-easier/>

- 1. Why Water Infrastructure Matters**
- 2. Financing Water Projects**
  - a. Program Considerations to Achieve Equitable and Affordable Outcomes
- 3. Federal Funding for Water Infrastructure**
  - a. The Water Resources Development Act (WRDA)
  - b. Clean Water and Drinking Water State Revolving Funds (SRFs)
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- 4. Doing More with the State Revolving Funds (SRFs)**
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- 6. Local Funding**
  - a. Stormwater Utility Fees
  - b. Rate Structures of Water and Wastewater Utilities
- 7. Bonds**
- 8. Funding for Individual Wells and Septic Systems**
- 9. Multi-Source Funding**
- 10. Types of Water Infrastructure Projects**
  - a. Green Stormwater Infrastructure (GSI)
  - b. Lead Service Lines
  - c. Funding Sources for Centralized and Distributed Infrastructure
- 11. Water Infrastructure Finance, Equity, and Environmental Justice**
  - a. Intergenerational Equity
  - b. Project Readiness
  - c. Project Sizing
  - d. Pursuing Green Stormwater Infrastructure (GSI) Projects
- 12. Additional Information and Resources**
  - a. Case Studies
  - b. Additional Reading: Water Infrastructure Funding and Policies
  - c. Other Resources and Innovations in Bonding
  - d. Other Resources for Green Stormwater Infrastructure

## WHY WATER INFRASTRUCTURE MATTERS

The state of water infrastructure directly impacts water affordability. To ensure clean and reliable water service, local utilities must make strategic investments and upgrades to infrastructure systems. But utilities struggle to sufficiently fund this work — through fees and rate increases, they have begun shifting this financial obligation to customers, whose contributions have become a larger share of maintenance and improvement costs.<sup>2</sup> This is burdensome for all customers; those in low-income, disadvantaged, and vulnerable communities are especially challenged to pay these higher water bills<sup>3</sup>.

Historically, federal and state governments were the predominant funders of water infrastructure projects, as they were responsible for almost all infrastructure development at the turn of the 20<sup>th</sup> Century. After World War II, urban infrastructure systems were expanded using federal dollars (and sometimes private industrial monies),<sup>4</sup> and data shows that up to the 1980s, federal government spending increased concurrently with state and local government spending. Furthermore, federal contributions came largely in the form of grants that water and wastewater utilities did not have to repay. But since then, federal government spending has decreased and leveled off while state and local government spending has continued to grow.<sup>5</sup> And this reduced federal funding now comes mainly in the form of low-interest loans, which may not be accessible to communities with poor bond ratings or insufficient revenue to repay.

To compound matters, the drop-off in federal funding has coincided with infrastructure having reached or surpassed its utility, functioning, and need for updating. Water infrastructure can last anywhere between 15 to 100 years (depending on the material), and as of 2017, much of the country's water infrastructure was anywhere from 60 to 130 years old.<sup>6</sup>

2 American Water Works Association, and Water Environment Federation. (2017). *The United State(s) of Water: The Midwest*. Water Environment Federation. [https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef\\_valueofwater\\_poster\\_midwest\\_final.pdf](https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef_valueofwater_poster_midwest_final.pdf)

3 Duke Nicholas Institute, and The Aspen Institute, Energy and Environment Program. (2020). *Water Affordability and Equity: RE-Imagining Water Services*. The Aspen Institute. <https://www.aspeninstitute.org/wp-content/uploads/2020/12/Water-Forum-Consolidated-Report-2020.pdf>

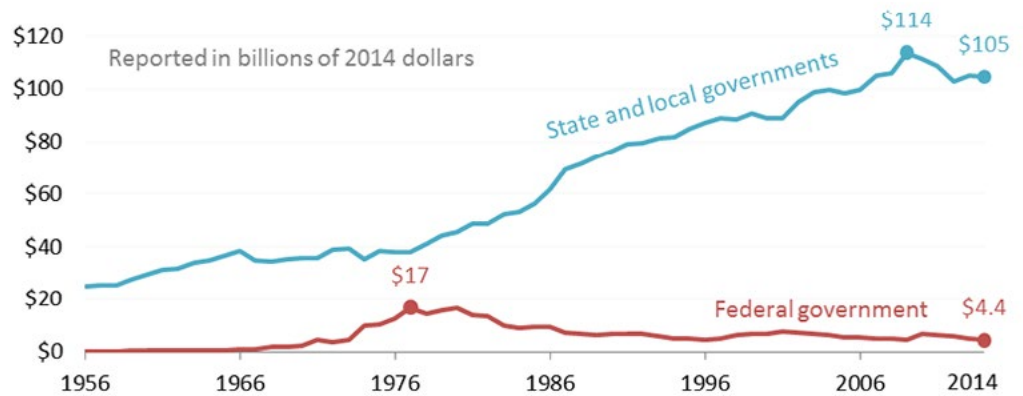
4 Sedlak, D. (2019, March 3). *How Development of America's Water Infrastructure Has Lurched Through History*. The Pew Charitable Trust. <https://pew.org/35mMYCF>

5 Bartlett, S., Cisneros, H., Decker, P., Heartwell, G., Warnock, A., Campanelli, B., ... Nellenbach, M. (2017, September). *Safeguarding Water Affordability*. Bipartisan Policy Center. <https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Infrastructure-Safeguarding-Water-Affordability.pdf>

6 American Water Works Association, and Water Environment Federation. (2017). *The United State(s) of Water*. Water Environment Federation. [https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef\\_valueofwater\\_poster\\_usa\\_final.pdf](https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef_valueofwater_poster_usa_final.pdf)

### State and local government spending on water and wastewater utilities continued to grow while federal spending declined since the 1980s

State and local governments spent 24 times as much as the federal government in 2014



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

Today, wastewater infrastructure is undersized (i.e. the pipes cannot adequately serve the current population size), and water supply infrastructure is leaky: Each year, the United States loses approximately 6 trillion (6,000,000,000,000) gallons of treated water from leakage and water main breaks. And the trifecta of an old water system, deferred maintenance, and reduced federal government support is further complicated and exacerbated by the risks and threats of climate change (ex. increasingly severe storms and flooding events).

[At the time of publishing] the current federal administration determined that addressing aging infrastructure should be a 21st Century priority, and it proposed the largest infrastructure investment since WWII with its American Jobs Plan. In addition to focusing on infrastructure projects (which include modernized and climate-resilient drinking, waste, and stormwater systems), the Plan is grounded in equity and affordability considerations which acknowledge that many low-income and BIPOC communities are, and have been, disproportionately impacted by aging infrastructure.

It is important to emphasize that the American Jobs Plan is a proposal: If it is carried forward, elements and details will undoubtedly change and evolve. Advocates can monitor congressional progression of policy and bills related to [Water Resources Development](#) and [Water Affordability](#), and should also subscribe to the [River Network Federal Water Policy Update Peer Group](#).

## TAKEAWAY

- As utilities work to make needed investments, customers bear the brunt of the cost, and water bills become more unaffordable.
- Historically, the federal government played a significant role in funding water infrastructure investment, but this is less the case today. Local water utilities bear much of the significant financial burden to make critical investments.
- Water infrastructure is old, prone to failures, and is further stressed by a changing climate.

## FINANCING WATER PROJECTS

Addressing U.S. water infrastructure needs will require billions of dollars. Though the federal government is no longer the main source of capital for water and wastewater infrastructure projects, increased federal funding and financing is crucial, and utilities can still access well-established funding programs at all levels of government. Additionally, they can explore financing strategies (e.g. bonds, fees, and bundling) to bring in needed resources.



## Full Reports on Municipal Financing

Both files are available for download here:

[https://drive.google.com/drive/folders/1SblHn9CAY5B7c-2UwtQyqlbMQmMEn2JT?usp=drive\\_link](https://drive.google.com/drive/folders/1SblHn9CAY5B7c-2UwtQyqlbMQmMEn2JT?usp=drive_link) (shortened link: <https://tinyurl.com/cihjulyreports>)

“Equitable Water Infrastructure Toolkit”

Permanent link:

<https://www.rivernetwork.org/connect-learn/resources/equitable-infrastructure-toolkit/>

“Increasing Funding and Financing for Sustainable Stormwater Infrastructure” at the link below.

Permanent link:

<https://cnt.org/publications/increasing-funding-and-financing-options-for-sustainable-stormwater-management>

