



IMPACT INVESTING
OPPORTUNITIES TO ADVANCE

WATER, HEALTH & EQUITY



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EXECUTIVE SUMMARY

The Environmental Policy Innovation Center's report [H2Equity: Rebuilding a Fair System of Water Services for America](#) highlights how America's water systems – which are used to deliver drinking water, remove waste and manage stormwater – are degraded or broken in more regions of the country than we think. This has resulted in a lack of access to safe drinking water or sewage treatment in some places, and in others unaffordable water supply, sewage overflows and flooded streets. The failures of our water systems prevent all Americans, especially lower income and historically marginalized Americans, from having the healthy and prosperous lives they deserve.

There is an opportunity for philanthropic impact investors to align their investment strategies with their or others' grantmaking – and with government funding initiatives – to advance solutions to these challenges and help move towards an equitable water future.

Two circumstances are combining to create this opportunity:

- **First, the water sector is becoming more innovative.** Generally hesitant to try new approaches, leading water utilities have recognized the need for innovation to address aging infrastructure, climate change and historic racial inequities. A wave of leadership retirements across the sector are also creating an opportunity for new diverse and innovative leadership. Non-profits, including the [US Water Alliance](#), [Rural Community Assistance Partnership](#), [Moonshot Missions](#), [EPIC](#) and others are sparking and responding to this interest to build a movement of change.
- **Second, federal infrastructure financing is increasing,** both with stimulus funding and with the [Infrastructure Investment and Jobs Act of 2021](#). The federal [Justice40](#) initiative creates incentives for this new financing to be allocated to historically marginalized communities. Because the bulk of water infrastructure is funded through low interest federal financing and municipal bonds, the catalytic role for impact investors is to help unlock these larger sources of capital for equitable and climate resilient projects. Investors can create significant leverage if they use their investment and grant resources to help direct federal funding to equitable and climate resilient projects.

The report's top recommendations to philanthropies making impact investments are focused on the following:

1. Make an allocation to early-stage tech companies in the water arena.

There are promising opportunities to invest in technology companies that are creating data tools to address transparency or operational needs of utilities and otherwise advance water, health and equity.

- (a) Investing directly in early-stage companies is where impact investors can be most catalytic and help new ideas take root. Some early-stage companies that previously benefited from impact investments over the past few years include [SimpleLab](#), [Varuna](#), [120Water](#), and [BioBot Analytics](#).
- (b) Impact investors could also deploy capital through a fund. This requires less hands-on staff time, and the companies benefit from fund managers' expertise and connections. Some investment funds dedicated to water sustainability include [Burnt Island Ventures](#), [Echo River Capital](#) and [Sciens Asset Management's](#) Sustainable Water Opportunities Fund.
- (c) An investor could also partner with an accelerator to encourage companies to apply that are aligned with equity, health and water criteria. For example, [ImagineH2O](#) is a non-profit accelerator expressly focused on water tech, and the accelerator [TechStars](#) has partnered with The Nature Conservancy to support environmental sustainability focused startups, including water tech companies.

2. Invest in intermediaries to unlock larger public funding sources for sustainable projects in historically marginalized communities.

Water utilities have ample sources of low-cost financing available to them, including federal infrastructure funding and

bond financing. But availability and access are not the same thing. Impact investments can provide predevelopment and bridge financing to help direct these funds to smaller and/or historically marginalized communities and to sustainable infrastructure projects. There are several intermediaries that are currently seeking funding to develop different (but complementary) predevelopment approaches:

- (a) [Communities Unlimited](#), a CDFI that is the regional affiliate of the [Rural Community Assistance Partnership \(RCAP\)](#), is providing predevelopment loans to historically marginalized communities in several Deep South states to help them prepare projects for federal water infrastructure funding. Another RCAP affiliate, the [Rural Community Assistance Corporation](#), also provides predevelopment financing for small system water projects across the West.
- (b) [Water Finance Exchange](#) is helping small, disadvantaged and rural communities navigate the decision-making process and steps necessary for public funding of sustainable and safe drinking water and wastewater systems. This includes a revolving predevelopment fund to support community predevelopment expenses.
- (c) [NDN Fund](#) is a Native Community Development Financial Institution that is providing predevelopment, bridge, and large-scale financing for Indigenous regenerative development projects. Water and wastewater projects can qualify for this financing.
- (d) [CK Blueshift](#) is developing several “Blue Bank” revolving funds to provide predevelopment financing and technical support to several replicable water use cases, including potential financing of water infrastructure and restoration on Tribal Lands.

3. Establish a municipal bond strategy.

The municipal bond market is another ripe opportunity for investment. An impact investor could partner with an existing fixed income manager that has a track record of sustainable bond portfolios, such as [Breckinridge Capital Advisors](#), [Alliance Bernstein](#), or [Community Capital Management](#).

These three recommendations offer strategies for impact investors to support and finance improvements in water infrastructure today. Other recommendations detailed in the report also include strategies to use grantmaking or below market loans (called program-related investments or PRIs for foundations) to support the development of projects in a pre-investment stage that could be investable in a few years.

There is an opportunity for philanthropic impact investors to align their investment strategies with their or others’ grantmaking – and with government funding initiatives – to advance solutions to these challenges and help move towards an equitable water future.

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ABOUT THE ENVIRONMENTAL POLICY INNOVATION CENTER

The Environmental Policy Innovation Center builds policies that deliver spectacular improvement in the speed and scale of environmental progress. A nonprofit start-up, EPIC is committed to advancing the best approaches to achieving results quickly. EPIC focuses on clean water, environmental markets, and utilizing data and technology to reach conservation outcomes. Our work in water focuses on eliminating disparities in water infrastructure funding, replacing lead service lines, investing in nature-based solutions, outcomes-based stream and wetland restoration, water quality partnerships, and affordability. EPIC is a fiscally sponsored project of Sand County Foundation.

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FOREWORD

This report is the result of an analysis conducted by the Environmental Policy Innovation Center (EPIC) to develop a framework with which to evaluate drinking water, wastewater, or stormwater return-generating investment opportunities and strategies, particularly those related to the health and racial equity aspects of water management. EPIC convened a team of experts in these fields and conducted semi-structured interviews with water-focused businesses, investors, policymakers and other experts to inform a capital scan and strategy for water investment opportunities.

The water investing landscape is smaller than other infrastructure sectors and lacking as strong of a set of deal pipelines. However, the team concluded that there is a significant opportunity for impact investors and grant makers to help build the water finance field and to engage in transactions that can catalyze markets and leverage capital to address health and equity disparities in the management of water.

This public summary of EPIC's analysis will enable foundations and impact investors to learn about potential investment strategies that can advance solutions at the intersection of sustainable water, equity and health.

Nothing in this report implies a recommendation or endorsement by EPIC of specific investments. Specific companies and investments are provided as illustrative examples only.

Photo by Maraget Bowman





A

INTRODUCTION:

CONTEXT AND FRAMING

DEFINITIONS:

For the purpose of this report, we use the Robert Wood Johnson Foundation's definition of health equity: "Health equity means that everyone has a fair and just opportunity to be as healthy as possible. This requires removing obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care."

We use Race Forward's definition of racial equity: "We achieve racial equity when race no longer determines one's socioeconomic outcomes; when everyone has what they need to thrive, no matter where they live."

When we refer simply to equity, we mean both health and racial equity.

When we refer to "historically marginalized" or "underserved" communities, we mean communities and neighborhoods that are low-income, historically disinvested in, or otherwise struggling to access health or financial resources.

This report builds upon Environmental Policy Innovation Center's report [H2Equity: Rebuilding a Fair System of Water Services for America](#). That report highlights how America's water systems – which are used to deliver drinking water, remove waste, and manage stormwater – are degraded or broken in more regions of the country than we think. This has resulted in a lack of access to safe drinking water or sewage treatment in some places, and in others unaffordable water supply, sewage overflows and flooded streets. The failures of our water systems prevent all Americans, especially lower income and historically marginalized Americans, from having the healthy and prosperous lives they deserve.

There are many systemic and institutional changes needed to transform how water is managed to address aging infrastructure and meet new challenges brought on by climate change and demographic shifts. In addition, a large investment of capital is needed. An estimated \$1 trillion additional investment over the next 25 years is needed to maintain and improve the nation's drinking water infrastructure, coupled with billions of dollars in additional costs for wastewater treatment upgrades and other capital improvements that will help water providers meet regulatory standards. This scale of investment has been a challenge for some water utilities, particularly those in smaller cities, rural communities and post-industrial cities with severely aged water infrastructure and a shrinking user base.

Ratepayers and taxpayers have financed more than \$4 trillion in water infrastructure since the 1950s. While the passage of major federal clean water legislation in the 1970s provided a large increase in federal grants to upgrade water services, federal water infrastructure grant funding has consistently fallen since then (until 2022). Congress has continued to fund critical programs such as EPA's water State Revolving Funds (SRFs) and the Water Infrastructure Financing and Innovation Act (WIFIA). However, these have been primarily loan- rather than grant-based programs, making it difficult for certain historically marginalized communities to apply for funding. State spending is typically only

a small fraction of federal funding. Local government and utility ratepayers, typically through municipal bonds, cover most of \$105 billion in water capital and operations expenses today, compared to \$4.4 billion in federal spending.¹

Water infrastructure requirements and costs are higher today. This is not just because of decades of underinvestment in maintaining infrastructure, but also because there are increasing requirements for treatment of drinking water and wastewater. For example, utilities must address legacy contaminants such as lead water pipes, naturally occurring contaminants such as arsenic, and emerging and persistent synthetic chemicals like per- and polyfluoroalkyl substances (PFAS). In addition, changing demographics and socioeconomic patterns mean that some utilities are overbuilt for their population, while others are straining to meet expanding user needs. And a changing climate has put new strains on the system as well, with too much stormwater being delivered in intense storms in some communities, and droughts causing a lack of drinking water in other communities. Further, estimates of infrastructure needs don't include costs for the millions of Americans relying on domestic wells and septic systems for their water needs.

At a high level, current financing mechanisms for municipal water solutions can be broken down into five categories:

- 1. State Revolving Funds (SRFs)** for drinking water and wastewater administered at the state level, with most funding coming both from Congress and from repayment of existing loans.
- 2. Tax-free municipal bond financing**, which can include certain green bonds.
- 3. Impact bonds**, which are a form of outcomes-based financing specifically for environmental or social solutions.
- 4. Venture capital investments** in early-stage companies and funds.
- 5. Public equity investments** in established water-related companies and funds.

Generally speaking, the first three categories above address infrastructure and capital improvement needs. This can include green infrastructure projects, lead pipe replacement, and rural utility consolidation solutions, but often also includes general "gray" infrastructure upgrades and expansion. The fourth category includes data- and tech-driven solutions that can be used by water utilities, municipalities or consumers to better inform or design targeted interventions. This includes companies seeking to use data to promote better transparency, deploy technology that will make existing infrastructure and operations more efficient, and launch new distributed water treatment designs. The final category primarily supports more traditional water companies and solutions, though there are a few fairly innovative public water companies.

There is currently an opportunity for impact investors to align their investment strategy to advance solutions to these challenges and help move towards an equitable water future. Two circumstances are combining to create this opportunity.



There is currently an opportunity for impact investors to align their investment strategy to advance solutions to these challenges and help move towards an equitable water future.

¹ While municipal bonds represent private investment financed by utility revenues or other municipal assets, the tax-free nature of municipal bonds means that federal taxpayers are also effectively paying for a portion of the bonds by giving up revenue for other programs that must be made up through other taxes and revenue.

First, the water sector is becoming more innovative. Long hesitant to try new approaches, leading water utilities have recognized the need for innovation to address aging infrastructure, climate change and historic racial inequities. A wave of leadership retirements across the sector are also creating an opportunity for new diverse and innovative leadership. Non-profits, including the [US Water Alliance](#), [Rural Community Assistance Partnership](#), [Moonshot Missions](#), [EPIC](#) and others are sparking and responding to this interest to build a movement of change.

Second, federal infrastructure financing is increasing, both with stimulus funding and with the [Infrastructure Investment and Jobs Act of 2021](#). The federal [Justice40](#) initiative creates incentives for this new financing to be allocated to historically marginalized communities. Because the bulk of water infrastructure is funded through low interest federal financing and municipal bonds, there is a catalytic role for impact investors to help unlock these larger sources of capital for equitable and climate resilient projects. Investors can create significant leverage if they use their investment and grant resources to help direct federal funding to equitable and climate resilient projects.

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B



IMPACT FOCUS AREAS

Using EPIC's [H2Equity](#) report as a foundation, this investigation focused on five primary areas of interest to advance equity, water and health.



Consolidate small water utilities. There are 50,000 water systems, 15,000 wastewater systems, and a growing number of stormwater systems operating in the U.S. More than half the water systems each serve 500 persons or less. Small utilities struggle to meet today's health standards while staying solvent, resulting in inequity for those served by small systems.² A massive reorganizational effort is needed to consolidate small utilities or regionalize various utility functions to improve health outcomes for millions of households.



Eliminate lead water pipes. Lead is a neurotoxin.³ Removal of all of America's 9-10 million lead pipes in a generation or less is an achievable goal. Most utilities are reluctant to expend the substantial financial resources to remove them – certainly not on a fast time scale. While a few cities have succeeded in eliminating their lead pipes and a handful of others are on their way to doing so, most cities are a long way from removal. Given \$15 billion in new financing, and with the proper political will and policies, lead pipes could be eliminated in America in one to two decades.



Improve water rate affordability. Water rates have nearly doubled since 2000, making water increasingly unaffordable for the poorest households and putting a significant strain on middle-income households.⁴ Deferred maintenance has resulted in an urgent need for infrastructure upgrades, whose costs are now borne by consumers – thus accelerating the trend toward higher rates.



Use data technology to increase public trust in tap water and utilities. Roughly 25% of Americans say they never drink their tap water, with fears about water safety being one reason why (along with taste and smell concerns).⁵ Such mistrust is particularly high among Black and Latino households, even when their water quality is essentially similar to their white neighbors.⁶ Mistrust of tap water is linked to decreased water consumption and use of expensive or unhealthy substitutes such as bottled water and sugary beverages.⁷ Improving trust in tap water is an immediate goal for water utilities and EPA, but they are seen as part of the problem. Increased transparency of water quality could be a huge step forward in addressing this trust gap. Where water is objectively safe to drink, all customers should have access to information they trust that confirms that. In this global era of information technology, this increased transparency should be achievable.



Reduce the inequity of stormwater impacts. Communities are experiencing 500-year flood events, coastal storm surges, sewer overflows, and basement backups with increasing frequency. These disasters, fueled by a rapidly changing climate, have a disproportionate impact on low-income residents and historically marginalized communities.⁸ Increased investment, especially in distributed systems like green infrastructure, is needed to improve community resilience.

2 NRDC. 2019. [Watered Down Justice](#) at 22; Teodoro, M. P., & Switzer, D. 2016. [Drinking from the talent pool: A resource endowment theory of human capital and agency performance](#). *Public Administration Review*, 76(4), 564-575.

3 Lanphear, B. P., Rauch, S., Auinger, P., Allen, R. W., & Hornung, R. W. 2018. [Low-level lead exposure and mortality in US adults: a population-based cohort study](#). *Lancet Public Health*, 3(4), e177-e184. doi:10.1016/s2468-2667(18)30025-2.

4 Teodoro, M. P. 2019. [Water and sewer affordability in the United States](#). *AWWA Water Science*, 1(2), e1129.

5 Results from the [2020 J.D. Power customer satisfaction survey](#) of residential customers of 90 water utilities that deliver water to at least 400,000 customers.

6 Javidi, A. and Pierce, G. 2018. [U.S. households' perception of drinking water as unsafe and its consequences: Examining alternative choices to the tap](#). *Water Resources Research*, 54, 6100–6113.

7 Id.

8 Frank, Thomas. [Flooding Disproportionately Harms Black Neighborhoods](#), *Scientific American* (June 2, 2020).



SPOTLIGHT—WHAT IS THE EXPERIENCE FROM OTHER FOUNDATION INVESTORS?

Water sustainability and equity issues are increasingly in the public eye. And both grantmaking and investing interest have followed that attention. A small handful of foundations are starting to chart a path forward for municipal water-related impact investing. Most notably:

- [The Kresge Foundation](#) provides grants and investments to advance equity-focused stormwater resilience solutions in large cities.
- [The Emerson Collective](#) is providing grants and technology investments at the intersection of climate innovation and social equity (including water).
- [Spring Point Partners](#) has provided grants and investments to advance municipal water sustainability solutions.
- [The Walton Family Foundation](#) has provided grant funding to advance municipal water supply investments in the American West.

There are also a few other foundations who have made occasional investments in the water arena, listed in [Appendix I](#).

Several foundations have shared useful lessons learned from their impact investing efforts. These have informed the EPIC team's observations and recommendations. For example:

- **Utility investment decisions are generally compliance driven.** Investments are most successful when they increase utility compliance as well as make a utility's operations more equitable and climate resilient.
- **The culture of utilities does not incentivize innovation.** Finance staff in particular tend to be traditional and risk averse. Innovative financing approaches are most successful in utilities with finance staff that are open to new approaches.
- **Fear of negative public feedback has made government transparency efforts difficult,** including public water quality reporting, public lead service line inventories, and even public disclosure of disbursement of SRF funds. But where present, transparency has driven action. Transparency progress may need to be made outside of the regulatory sector.
- **Because the non-water benefits of green stormwater and other natural infrastructure solutions (local jobs, wildlife habitat, urban greening, etc.) accrue to non-water entities, they can be viewed by utilities as "externalities" and not valued.** Incorporating funding for those non-water benefits involves collaboration among municipal agencies. It is important to plan for a longer process to accommodate inter-agency collaboration.
- **Traditional approaches to public contracting and procurement for large, engineered projects make it hard for utilities to design and build small, distributed and more resilient infrastructure.** A creative approach to contracting and procurement is vital in advancing these smaller solutions.

A small handful of foundations are starting to chart a path forward for municipal water-related impact investing.



C

CENTERING A WATER INVESTMENT STRATEGY IN EQUITY

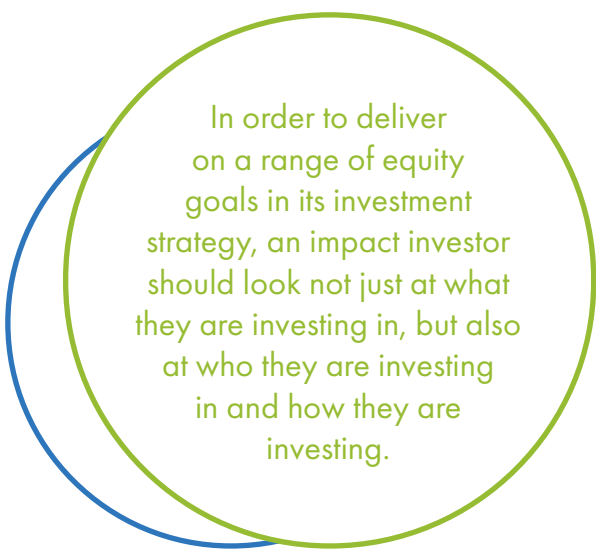
Race Forward, defines [racial equity](#) as both an outcome and a process. “As an outcome, we achieve racial equity when race no longer determines one’s socioeconomic outcomes; when everyone has what they need to thrive, no matter where they live. As a process, we apply racial equity when those most impacted by structural racial inequity are meaningfully involved in the creation and implementation of the institutional policies and practices that impact their lives.” This includes elimination of policies, practices, attitudes, and cultural messages that reinforce differential outcomes by race or that fail to eliminate them.

Morgan Stanley defines [racial equity investing](#) as “the effort to direct investment capital toward the advancement of historically disadvantaged groups, including Black, Hispanic, Asian-Indian, Asian-Pacific and Native American populations” with a goal “to use race and ethnicity as a consideration when redressing areas of inequity and promote efforts to advance equitable opportunities using investor capital as a lever.”

There is a broader Diversity, Equity and Inclusion framework that is needed to address racial inequities across investments from all sectors (corporate, government, philanthropy, etc.). Achieving balance in representation, empowerment and economic opportunity is critical to financial outcomes.

In order to deliver on a range of equity goals in its investment strategy, an impact investor should look not just at *what* they are investing in, but also at *who* they are investing in and *how* they are investing. While this report focuses primarily on *what* an impact investor should be investing in, as an investor proceeds towards specific investments, they should also incorporate equity criteria and processes to address the *who* and *how* factors as well.

An investor interested in centering equity should build a set of expectations into how it sources and designs any investment, from designing a loan vehicle, to selecting a potential fund manager, to developing a bond portfolio. This includes prioritizing investment partners that are: (1) led by People of Color; (2) committed to addressing diversity, equity and inclusion within their company; and/or (3) committed to working/investing at the intersection of social justice and environmental sustainability. In addition, an investor should intentionally assess the potential impacts on health and racial equity of any investments under consideration – both the benefits and negative consequences. Investors should also take care to ensure that impacted communities are or have been consulted about the project or investment to ensure potential impacts are fully understood and communities have a chance to influence the project.



In order to deliver on a range of equity goals in its investment strategy, an impact investor should look not just at what they are investing in, but also at who they are investing in and how they are investing.



SPOTLIGHT: HOW TO STRUCTURE BOND SPENDING TO EQUITABLY BENEFIT COMMUNITIES

In 2006, California voters approved Proposition 84, a bond measure authorizing \$5.4 billion in spending on projects to improve parks, natural resource protection, and water quality, safety, and supply. Spending was explicitly prioritized for disadvantaged communities. UCLA released an [analysis](#) of the bond spending with lessons learned about how prioritizing investments in disadvantaged communities can be most effective. While this analysis focuses on a statewide bond initiative, the lessons learned can provide insights for other investment efforts that seek to advance equity:

- Define priorities for bond spending more clearly and set specific criteria to operationalize those values and specific goals to measure success.
- If you want results to benefit more people, put people into the equation, through establishing clear targets of people served.
- Improve and standardize data reporting requirements so that data is more readily available, easily accessible, reliable, and usable for accountability.

Equity, Health and Water Sustainability Impact Criteria

If an investor or foundation is interested in advancing equity, health and water sustainability goals, a set of screening criteria can be useful when reviewing investments. These could be utilized to evaluate specific opportunities across the life cycle of the investment, particularly during the due diligence phase. The criteria listed below are modeled off water investment criteria developed by one of our authors (Jalonne White-Newsome) to guide investments at another foundation. While these questions provide a starting point, they should be fine-tuned by the investor or foundation to ensure the questions closely align with individual goals. These criteria may need to be adjusted or supplemented depending on the type of resource being deployed (e.g., bond, equity, loan, PRI, grant). For example, a set of bond criteria may want to assess whether the bond complies with one or more of the emerging bond standards such as the Climate Bond Initiative's [Climate Bond Standards](#) or the Center for American Progress' proposed [green bond labeling system](#).

Equity, Health & Water Sustainability Impact Criteria

Key Questions	Weight of Impact (Strong, Moderate, Weak)
Equity Questions	
<p><i>Equity:</i> Does the project or investment provide tangible – direct and/or indirect – benefits to underserved communities? Does it allow financial and other resources to reach new places? What does success look like, now and into the future?</p>	
<p><i>Unintended Consequences:</i> Is there a risk that underserved communities will be disproportionately impacted by the investment? If so, are there opportunities to mitigate the risk?</p>	
<p><i>Systems Approach:</i> Does the project or investment help address systemic and institutional barriers that exacerbate poor health outcomes and other conditions for underserved communities?</p>	
<p><i>Equity-Focused Leadership:</i> Does the grant or investment partner adequately demonstrate a commitment to diversity? Is the leadership team and board diverse, and do they have internal policies that address diversity, equity and inclusion?</p>	
<p><i>Key Stakeholder Engagement:</i> Has the grant or investment partner meaningfully engaged impacted partners? Have outcomes/goals been co-created with the community?</p>	
Water & Health Questions	
<p><i>Utility Consolidation:</i> Will the project or investment help small utilities share services or consolidate with neighbors?</p>	
<p><i>Lead Water Pipes:</i> Will the project or investment help to advance full removal of lead pipes?</p>	
<p><i>Affordability:</i> Will the project or investment help to improve affordability of water rates?</p>	
<p><i>Data & Transparency:</i> Will the project or investment generate better data or publicize data related to water affordability, quality, or health outcomes?</p>	
<p><i>Stormwater:</i> Will the project or investment help reduce the inequities of stormwater impacts?</p>	
<p><i>Measurable Co-Benefits:</i> Does the project or investment provide ancillary benefits to communities or in areas of work that are a priority for the investor?</p>	
<p><i>Alignment with Local Plans:</i> Will the project or investment support the goals/objectives of local plans that address water, health and/or equity (such as climate action plans, health impact assessments, lead line replacement plans, etc.)? Does the plan cover unique issues of any disadvantaged populations in the community?</p>	
Market Development Questions	
<p><i>Additionality:</i> Will the investor’s support of this effort be catalytic? Would this project or organization be able to attract resources without the investor’s involvement?</p>	
<p><i>Scalable & Replicable:</i> Can the proven intervention be replicated or scaled to other cities, organizations, Native lands, utilities, etc.?</p>	
<p><i>Co-Funders & Co-Investors:</i> Are there other like-minded private or public investors interested in this opportunity? Is there a way to stack capital?</p>	



RECOMMENDATIONS

Below is a list of recommended options for advancing a water, health and equity investment strategy. The first three recommendations are specifically investment-oriented, whereas the latter three focus on where a grant maker could target a range of resources both to strengthen the sector and to deliver a pipeline of investments for more meaningful impact. A summary chart of the recommendations is provided at the end of this chapter.

Recommendation 1: Make an allocation to early-stage tech companies in the water arena.


The most immediate investment opportunities in water center around equity investments in early-stage companies. The municipal water space is outdated in terms of information technology. Improved data and information technology can not only improve operational efficiency and thus reduce costs, but also can increase transparency of water quality and other risks. There is growing activity in venture capital and the startup ecosystem to explore how data-driven solutions can promote transparency and encourage more targeted and equitable water infrastructure investments.

There are three potential ways an investor could pursue investments in this arena.

a. Invest directly in technology companies that are working to expand data transparency and otherwise advance water, health and equity. Investing in early-stage companies is where an investment can be most catalytic and help new ideas take root. Some early-stage companies that benefited from impact investments over the past few years include [SimpleLab](#), [Varuna](#), [120Water](#), and [BioBot Analytics](#). [Appendix II](#) provides some examples of early-stage water companies.

b. Invest through a fund. In an investment fund, the fund manager leads the oversight and support of portfolio companies. Fund investments require a lot less hands-on staff time for the impact investor, and companies benefit from fund managers' expertise and connections. There are very few fund managers focused exclusively on water. A few that do focus only on water are [Burnt Island Ventures](#), [Echo River Capital](#), and [Sciens Asset Management's](#) Sustainable Water Opportunities Fund. Alternatively, an investor could invest in more general sustainability funds that touch on water. This would provide some exposure to new water companies but would be more limited in its impact. [Appendix II](#) provides some examples of funds.

c. Partner with an accelerator. An investor could also partner with an accelerator to encourage companies to apply that are aligned with equity, health and water criteria. A startup accelerator is a business program that supports early-stage companies through education, mentorship, public recognition, and sometimes financing. For example, [ImagineH2O](#) is a non-profit accelerator expressly focused on water tech, and the accelerator [TechStars](#) has partnered with The Nature Conservancy to support environmental sustainability focused startups, including water tech companies. [Appendix II](#) provides some examples of accelerators.



The most immediate investment opportunities in water center around equity investments in early-stage companies.

Recommendation 2: Invest in intermediaries to unlock larger public funding sources for sustainable projects in historically marginalized communities.

The municipal water sector has access to substantial low-cost financing through SRF and municipal bond programs. A catalytic role for impact investors is to use their investment flexibility to unlock public financing for targeted investments, such as those that provide health benefits to historically marginalized communities or those that advance climate resiliency.

Investment is easiest when there is a deep deal pipeline from which to select investments. A suite of intermediaries is needed to build this deal pipeline. This includes fund managers, developers who construct and finance sustainable infrastructure such as green solutions, and technical assistance providers who work with utilities and cities to develop fundable projects. The water investing space is young and strong intermediaries with established pipelines of deals do not currently exist. However, there is some encouraging movement towards this. Several organizations have identified common pain points, particularly for infrastructure needs, and are working to design blended capital solutions that address these issues. These efforts could potentially benefit from a

combination of grant support, concessionary debt and/or credit enhancements.

Multiple solutions are being explored by these intermediaries, but the most notable theme is the opportunity to provide predevelopment financing and technical assistance to small and/or historically marginalized communities that have high infrastructure needs but can't afford the costs to develop proposals (especially innovative equitable and climate resilient designs) and can't afford the staff time to navigate complex loan fund application processes. This was identified as a major pain point in many of our interviews. Addressing this challenge would help to meet needs related to utility consolidation, lead pipe removal, water rate affordability and stormwater.

The passage of the [Infrastructure Investment and Jobs Act](#) highlighted the need for intermediaries to provide predevelopment loans to help historically marginalized communities apply for infrastructure funding. There is exciting work in development, but capacity is still low and solutions are not fully developed. Many intermediaries may require grant support in combination with investment funding.

There are several intermediaries that are currently seeking funding to develop different (but complementary) predevelopment approaches. For example:

- a. [Communities Unlimited](#), a CDFI that is the regional affiliate of the [Rural Community Assistance Partnership](#) (RCAP) is providing predevelopment loans to historically marginalized communities in Arkansas, Oklahoma, Tennessee, Mississippi, Alabama, Louisiana and Texas to help them prepare projects for federal municipal water infrastructure funding. Another RCAP affiliate, the [Rural Community Assistance Corporation](#), also provides predevelopment financing for small system water projects across the West.
- b. [Water Finance Exchange](#) is helping small, disadvantaged and rural communities navigate the decision-making process and steps necessary for public funding of sustainable and safe drinking water and wastewater systems. This includes a revolving predevelopment fund to support predevelopment expenses.
- c. [NDN Fund](#) is a Native Community Development Financial Institution that is providing predevelopment, bridge, and large-scale financing for Indigenous regenerative development projects. Water and wastewater projects could qualify for this financing.
- d. [CK Blueshift](#) is developing several "Blue Bank" revolving funds to provide predevelopment financing and technical support for several replicable water use cases, including potential financing of water infrastructure and restoration on Tribal Lands.

In addition to these projects, there are also ideas that are much earlier in their development and are not currently being championed by an existing intermediary. These ideas would likely require some feasibility analysis as well as the right partner to design, structure and raise capital for this effort. An example is developing a financing program for post-industrial and other smaller underserved cities that need infrastructure investment, but lack the population base to service future debt, and thus would struggle to repay without significant grant support or credit enhancements.



A catalytic role for impact investors is to use their investment flexibility to unlock public financing for targeted investments.

Across these and other examples, grant capital would most likely be needed in the near term in addition to investment funding, both to build the capacity of the intermediaries that could execute these options and to develop a pipeline of investments. Once capacity and pipeline are built, low interest loans, forgivable grants and/or guarantees could be used to capitalize each opportunity.

An investor could also seek to help some of these water intermediaries partner with non-water intermediaries to develop the financial infrastructure for the tools more quickly. We have heard some skepticism about whether existing intermediaries would be willing to partner, given the likely small size of the resulting loans and the time it will take to develop replicable deal flow.

Although guarantees seem like a natural tool for many of these efforts, some experts we interviewed shared a skepticism of the potential benefits of a partial guarantee, as they are unlikely to result in more favorable financing terms for the project. Many of the risks inherent to the ideas above – including predevelopment financing or supporting infrastructure needs in post-industrial cities – are real (versus perceived) risks. If guarantee losses are more likely, grants to cover the anticipated losses may be more appropriate.

Recommendation 3: Pursue a municipal bond strategy.

The municipal bond market is another ripe opportunity for investment. Local municipal water utilities account for roughly 85% of water infrastructure spending, and the vast majority of that is financed through municipal bonds. While most water bonds fund traditional “gray” infrastructure, there is increasing interest in bond financing sustainable infrastructure solutions that would better advance health and equity, including bonds that finance lead pipe removal, more natural stormwater management, and utility consolidation. Alternatively, an investor could also pursue investments in state-issued bonds. For example, the State of Massachusetts’ [Clean Water Trust State Revolving Loan Program](#) has begun to issue Sustainability Bonds that will leverage their SRF funding to finance water infrastructure improvements for communities identified as the most disadvantaged, based upon an affordability criteria developed by the Trust.

To invest in municipal bonds, an investor may want to partner with an existing fixed income manager that has a track record of sustainable bond portfolios, such as [Breckinridge Capital Advisors](#), [Alliance Bernstein](#), or [Community Capital Management](#). Because bond issuances are generally rated, sizable and more liquid, a municipal bond strategy could be pursued as part of an investor’s standard investment portfolio. No outsized risk or below market return would be involved. For foundation investors, this means that a water-focused municipal bond strategy could be established as part of the foundation endowment’s portfolio rather than the Program Related Investment (PRI) portfolio that is usually managed out of the foundation’s grants allocation.

One caveat associated with creating a bond portfolio is that many of the investment managers noted above require commitments of at least \$100M to develop unique bond investment criteria. This strategy is thus likely most suited for a large foundation endowment. An investor could explore partnering with a few other interested investors to allocate sufficient capital to justify a unique bond portfolio, but it is unclear if an investment manager would be receptive to this approach. Alternatively, [Adasina Social Capital](#) enables separately managed accounts for bond investments with a \$1M minimum investment (though they currently have a waiting list for access to this strategy). Adasina invests with a screen of racial, climate, gender and economic justice.

An investor could also pursue more innovative forms of bond issuances. For example, [Quantified Ventures](#) has developed several environmental impact bonds with municipalities that link investors’ rate of return to a pre-established environmental outcome, transferring the risk of trying new environmental approaches from the municipality to the investor.



While most water bonds fund traditional “gray” infrastructure, there is increasing interest in bond financing sustainable infrastructure solutions that would better advance health and equity.

WHAT DOES RISING BOND RATES MEAN FOR WATER INFRASTRUCTURE?

For the past decade or so, municipal bond rates have been very low, making it relatively inexpensive for cities to borrow money through the bond market. With low rates, many well-resourced cities have preferred issuing bonds over borrowing funds from State Revolving Loan funds because of the increased paperwork of SRF loans and associated loan conditions such as the requirement to use American iron and steel that drive up the cost of a project.

The current inflationary period has driven the Federal Reserve to raise interest rates. This means that the cost of issuing new bonds has increased for municipalities. While it is too early to know for sure the impact of this change, it may increase the attractiveness of SRF loans for sophisticated cities, especially in states where the 49% loan forgiveness is spread across all loans (rather than concentrated on more financially disadvantaged communities). This may increase competition for SRF funds, potentially making it harder for historically marginalized communities to access SRF funds. This development makes even more important the interventions from impact investors and grantors to help marginalized communities submit viable SRF applications.

Recommendation 4: Build investment capacity in the water arena.

A strong theme in our research was the relatively low investment capacity in the water arena that is focused on creative equity, health and sustainability solutions. This capacity will be critical to develop the pipeline of deal flow needed to expand investment in the area. A foundation or other investor that also provides grant funding could pursue a complementary grant or set of grants to build the water investing ecosystem while investing in early opportunities.

There are two actions that could help build this capacity:

- 1. Technical assistance support for small and/or historically marginalized communities.** As discussed previously, many utilities in small and/or historically marginalized communities lack the capacity to design and apply for federal and state grant and loan funding for their water infrastructure needs. A grantor could support “circuit rider” technical assistance staff at regional organizations that could help these small and underserved communities design sustainable projects and navigate the complex processes to access state or federal infrastructure funding.
- 2. Convenings.** To build the field’s investment capacity, a grantor could support a series of convenings focused on water, equity and health investing. A core group of individuals interested in water investing could attend all the convenings. Early convenings could bring in experts from other fields who have had similar experiences. Later convenings could support strategy development and peer input for differing investment strategies.



Investment intermediary capacity will be critical to develop the pipeline of deal flow needed to expand investment in the area.

Recommendation 5: Focus on place-based investments in communities with a strong equity pull.

Water is inherently a local issue. An investor could select several communities (e.g., two to 200, depending on funds available) where it would dig deep in supporting the development of innovative financing solutions through grants and low interest investments. This would require selecting a community that has some key attributes indicating that engagement would be timely and have a reasonable chance of success, including:

- Water issues impacting the health of underserved populations that have a feasible solution;
- Core leadership capacities in place to consider innovative solutions and financing (such as innovative leadership at the utility and/or municipality and engaged community groups);
- Sufficient potential resources (state and federal grants and loans, bonding capacity, etc.) to address the infrastructure needs; and
- An urgency for investment funding, without the solution being so sufficiently developed that introducing innovative approaches would be too late in the process.

Engaging in a place-based approach would provide direct impacts to priority populations. If the solutions and the process of achieving them are well-documented and publicized, they could be replicated in other communities. It is also an opportunity to build partnerships with other entities that are working in place, to stack different forms of capital (such as EPA environmental justice grant dollars), and potentially address other equity concerns in these places.

Recommendation 6: Provide specific grant or investment support for priority issue area solutions.

While the other recommendations in this report are each designed to address several or all of the priority issue areas outlined above in [Section B](#), several of the issue areas have some unique needs where investment or investment-related grant support could advance solutions. Grant funding could help directly advance solutions, and some grants could build eventual deal flow. While the investment opportunities identified below may not result in extensive deal pipelines, they provide unique but important value for the priority issues.

1. Consolidate small water utilities:

- a. A grantor could provide grant funding in one/more states to create policy urgency for consolidation.
- b. A grantor could provide grant funding in one/more states to support facilitation for consolidation exploration.
- c. An investor could invest in a regional co-op or other progressive consolidating entity.

2. Eliminate lead water pipes: In many states, the replacement of the portion of a lead service line on private property cannot be financed through public funds. This [has been demonstrated](#) as leading to inequitable outcomes.

- a. A grantor could establish a fund in one/more communities to support replacement of the private portion of lead service lines. Because this funding is non-reimbursable by the municipality, this would not be a revolving fund.
- b. A grantor could support advocacy to clarify that public funding can be used for the private line portion of replacement, indirectly expanding investment opportunities.

3. Restructure water rates and assistance programs to improve affordability:

- a. An investor could support development of unique financing structures to enable underserved utilities to pay for cost-saving infrastructure or technology improvements through the cost savings. This could reduce the pressure to increase rates.
- b. A grantor could support research and technical assistance to develop industry-wide recommendations for rate restructuring to address affordability.
- c. A grantor could support advocacy for federal and state customer assistance programs, and/or provide direct assistance to customers through intermediaries such as [The Human Utility](#) or [We the People of Detroit](#).

4. Use data technology to increase public trust in tap water and utilities:

- a. A grantor could pilot a grant fund that would reimburse small or underserved utilities for costs of trying a new technology if that technology did not meet articulated goals.

5. Reduce the inequity of stormwater impacts.

- b. An investor could provide equity, debt or grant support to progressive consulting companies such as [Greenprint Partners](#) that are expressly seeking to develop green stormwater infrastructure in underserved neighborhoods.
- c. An investor could provide grants to support development of more environmental impact bonds to finance green stormwater in underserved communities, and then invest in those bonds (as described in [Recommendation 3](#) above).
- d. A grantor could support efforts to enable cities to blend stormwater financing with other city financing that would pay for the green stormwater co-benefits. The [World Resources Institute](#) is currently piloting this in San Francisco.

Several water issue areas have unique needs where investment or investment-related grant support could advance solutions.



Summary of Recommendations

Recommendation	Impact Topics Addressed	Pros	Cons
1. Make an allocation to early-stage tech companies in the water arena.	<ul style="list-style-type: none"> ● Increase transparency & trust ● Water rate affordability ● Stormwater 	<ul style="list-style-type: none"> ● Immediate deal flow available & this sector is growing ● Water sector has outdated IT -- lots of room for improvement ● Could increase efficiency & costs as well as transparency 	<ul style="list-style-type: none"> ● Direct investing could be hands on & time consuming for investor's staff ● There are only a few impact funds focused on water ● Utilities have been slow to adopt new technology ● Municipal market means unlikely to have typical VC "hockey stick" returns
2. Invest in intermediaries to unlock larger public funding sources.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Water rate affordability ● Stormwater 	<ul style="list-style-type: none"> ● Huge opportunity to leverage federal funds ● Builds critical capacity for investment field ● Opportunity for investor to be catalytic ● Direct links to impact focus topics 	<ul style="list-style-type: none"> ● Grant support may be initially needed to build capacity & pipeline ● Risk that deals will not develop
3. Establish a muni bond strategy.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Stormwater 	<ul style="list-style-type: none"> ● Deal flow exists & could be targeted (if investment is of sufficient size) ● Bonds are stable low risk investments ● Bonds are the primary way municipalities fund water infrastructure 	<ul style="list-style-type: none"> ● Additionality value is weak (the bonds will be bought by someone) ● It is hard to filter out sustainable bonds from traditional infrastructure bonds ● Muni bond managers require substantial commitments to design a focused portfolio
4. Build investment capacity in the water arena.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Water rate affordability ● Increase transparency & trust ● Stormwater 	<ul style="list-style-type: none"> ● Capacity development is a key prerequisite for developing deal pipeline ● An investor could be catalytic in advancing the field ● TA support for underserved communities could unlock large public investments – good leverage 	<ul style="list-style-type: none"> ● Grant funds, not investments, are needed here
5. Focus on place-based investment in communities with a strong equity pull.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Water rate affordability ● Increase transparency & trust ● Stormwater 	<ul style="list-style-type: none"> ● Opportunity to provide direct benefits to a few communities ● Strong partnership opportunities with NGOs, other public & private funders, & investors ● On-the-ground work provides large learning opportunities 	<ul style="list-style-type: none"> ● Risk that the intended result is not attained or takes a long time ● Opportunity costs of not investing in other more broadly applicable (but less directly impactful) solutions
6. Provide specific grant or investment support for priority issue area solutions.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Water rate affordability ● Increase transparency & trust ● Stormwater 	<ul style="list-style-type: none"> ● Targeted solutions for targeted impact interests 	<ul style="list-style-type: none"> ● Most opportunities require grant funding ● The few investment opportunities are potentially impactful on their own, but may not scale



E

CAUTIONS ABOUT THE WATER INVESTING LANDSCAPE

Based on interviews, research and experience, the EPIC team has observed that, relative to other sectors (community development, affordable housing, energy, etc.), the water arena has some unique opportunities and challenges which should be considered when crafting an investment strategy. All of these factors were taken into account when developing the recommendations described above.

1. The realities of raising taxes or rates, and elected leader roles, constrain the level of new investment in water infrastructure.

The Safe Drinking Water Act and Clean Water Act provide a baseline of regulatory compliance, but these do not adequately address many of the current water challenges (such as emerging contaminants and lead service lines). When they do provide a mandate, resulting consent decrees more often than not are in place for years if not decades before the environmental problem is resolved. These laws are also not designed to ensure a utility is resilient to climate-related risks. The benefits of many sustainable water infrastructure investments often flow beyond the water utility and its customers to the broader community, creating disincentives for utilities to invest in multi-benefit solutions. This can be mitigated by political pressures placed on water utilities by the community, but this requires the community to have a level of awareness and advocacy to wield their influence. At a political level, investments in improved water management result in real and immediate costs, but their benefits are often avoided problems and thus not something that a utility or city council leader can point directly to in justifying expenses. To address these challenges, donors and investors should ensure that the community is engaged in infrastructure decisions, which will build political will for sustainability-focused solutions.



2. The existence and structure of SRF programs make it difficult to design a loan product that is competitive on interest rate, repayment structure and term.

While there is a massive water infrastructure investment need in the U.S., many critical projects are not being financed. This is partly due to the hesitation among water utilities to take on debt. The SRF originally was a grant program, but less than one percent of SRF funds are still grants. It now mainly provides low-cost debt at 0%-1%. The potential availability of SRF and grant capital has created an aversion to higher borrowing cost debt among some water utilities, who would rather delay their infrastructure needs in anticipation of a future grant. The availability of low-cost SRF debt also makes utilities resistant to higher priced privately financed alternatives – even if they don't actually plan to access the SRF loan program. For those utilities that decide to take on debt, the application process for SRF funding is complex, and small and underserved communities without experienced staff and financial resources to cover predevelopment costs struggle to tap into these funds.⁹ On the positive side, the SRF is an incredibly valuable source of long-term financing for infrastructure projects if water utilities can address their predevelopment needs and the time and effort associated with tapping into these resources. For larger and particularly investment grade water utilities, the municipal bond market is a relatively efficient way for them to finance capital improvement projects.

3. Smaller and historically marginalized communities face an uphill battle when solving for their water financing needs.

There is an inherent tension in many communities in trying to finance their water infrastructure needs while keeping water rates affordable. The energy space benefits from a reduction in energy costs to the consumer or business which can be used to repay any outstanding debt – water rates are often too low for savings to cover capital investments over a reasonable time period. Beyond the debt/rate trade-off question, small and underserved

⁹ Data is sparse, but recent research by EPIC indicates that SRF funding tends to go to larger utilities that can afford the predevelopment costs and can navigate the complex application process. Based on data from 2011-2020, only 7% of water systems received SRF funding, representing roughly 30% of the U.S. population. And funding goes unspent every year in multiple states, reflecting both the complexity of the application process and the need for predevelopment support. This is especially true for smaller underserved systems. [Katy Hansen, Sara Hughes, Andrea Paine, and James Polidori. \(2021\). "Drinking Water Equity: Analysis and Recommendations for the Allocation of the State Revolving Funds." Environmental Policy Innovation Center.](#)

communities have fewer residents, and oftentimes shrinking populations. This limits the ability of the water utility or city to service any debt through rate increases. In addition, these smaller borrowers are also more likely to be below investment grade, which increases their cost of capital and debt service payments. As mentioned above, smaller and underserved communities also often lack staff and expertise to apply for lower cost capital (such as SRF funding or USDA rural development financing), or to design other innovative forms of investment. There is a need to solve for how these projects can “pencil” before exploring financing options. The new federal water infrastructure funding that requires at least 49% be disbursed as grant or loan forgiveness provides a strong opportunity to address the infrastructure needs of these marginalized communities with a high percentage of grant funds.

- 4. The landscape of intermediaries is small, and many have limited capacity.** For investors to deploy capital into equitable water solutions in an efficient manner, a suite of intermediaries is needed. This includes fund managers, developers who construct and finance sustainable infrastructure such as green solutions, and technical assistance providers who work with utilities and cities to develop fundable projects. The landscape of intermediaries is currently quite limited in the water space. While there is interest in doing more work in this arena, the existing intermediaries currently do not have the capacity and scale to manage an ambitious grant or investment pool. Developing increased intermediary capacity can be a strong leverage strategy for building deal flow and scalable impact.
- 5. The development of water impact metrics – especially equity metrics – is young, and an agreed set of metrics do not yet exist.** Developing environmental metrics for investments is still a relatively new practice, and metrics for water or equity investments is even more nascent. Some equity impact metrics for investments are currently being designed, but they are new and untested.¹⁰ Water metrics are slow to develop because water can be more nuanced and place-based than other environmental investments – while an energy efficiency investment can be evaluated by measuring energy saved, the impacts of a water investment often depend on where and how the improvement is achieved (for example, by traditional “gray” infrastructure vs. green infrastructure). There is a real opportunity for leadership here. In addition to the need for a general impact metrics framework, we would expect the impact criteria to vary depending on if the investment is a bond or public equities strategy versus a smaller, bespoke PRI strategy or early-stage investment in a startup. A bond or public equities strategy is designed for scale and therefore must be realistic as to what companies or projects are eligible to meet deployment targets. A more tailored program can be more rigorous and targeted if the investment commitment is smaller and therefore the size of the pipeline less of a concern.



¹⁰ Fixed income managers have developed frameworks for green bonds and select foundations have also developed their own proprietary strategies, mostly for grant/PRI resources.

APPENDICES

APPENDIX I

OTHER FOUNDATIONS ENGAGED IN WATER INVESTING

Water sustainability and equity issues are increasingly in the public eye, and both grantmaking and investing interest has followed that attention. A small handful of foundations have engaged in municipal water-related impact investing. While sparse, they are starting to chart a path forward.

Four of the most active foundations investing in water have been Kresge, the Emerson Collective, Spring Point Partners, and the Walton Family Foundation.

- The [Kresge Foundation's](#) Social Investment Practice and Investments team developed a strategy to advance climate resilience and water equity, in alignment with their Environment Program grantmaking. Water investments have focused on sustainable stormwater solutions.
- The [Emerson Collective](#) is providing grants and technology investments at the intersection of climate innovation and social equity (including water). The [Elemental Accelerator](#) is a primary investment tool for Emerson's investing. They have funded more than 70 projects across systems at the root of climate change. A few of these have focused on water topics.
- [Spring Point Partners](#) is a social impact venture blending grantmaking, impact investing and program operations to advance social change. From 2017-2020 Spring Point made a series of investments related to municipal water and food/agriculture sustainability. Spring Point pivoted its strategy in 2020, focusing their water program on developing innovative water utility leadership.
- While the [The Walton Family Foundation](#) has not yet deployed PRI or other mission related investments in their environment program, the Foundation provided grant capital to develop the 2015 report [Liquid Assets: Investing for Impact in the Colorado River Basin](#) that designed blueprints for water investment opportunities in the region. They then partnered with other foundations to provide grant support to develop municipal and agricultural investment opportunities outlined in that report.

There are a handful of other foundations that have made occasional investments in the water arena. They include:

- The [San Francisco Foundation](#)
- The [Silicon Valley Community Foundation](#)
- The [McKnight Foundation](#)
- The [Cleveland Foundation](#)
- The [Great Lakes Protection Fund](#)
- The [William Penn Foundation](#)
- The [Agua Fund](#)
- The [Zell Family Foundation](#)

APPENDIX II

CHART OF PLAYERS IN THE WATER INVESTMENT LANDSCAPE

This chart provides an overview of some of the players in the water investment landscape. This is not designed to be an exhaustive list of all players. Instead, it is provided to give a sense of the range of players in water.

Nothing in this appendix implies a recommendation or endorsement of specific investments by EPIC. Specific companies and investments are provided as illustrative examples only.

THE CHART INCLUDES THE FOLLOWING CATEGORIES:

- [Intermediaries & Consultants](#)
- [Accelerators](#)
- [Technology Companies](#)
- [Investment Funds](#)
- [Bond Asset Managers](#)
- [Public Equities](#)

Company/Fund Name	Description	Alignment with Impact Topics
INTERMEDIARIES & CONSULTANTS		
Rural Community Assistance Partnership	Exploring development of a predevelopment/technical assistance financing mechanism to help small systems with their water sustainability needs.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Affordability ● Transparency & trust ● Stormwater
CK Blueshift	Developing a “Blue Bank” revolving fund to provide predevelopment financing & technical support to replicable water use cases.	<ul style="list-style-type: none"> ● Utility consolidation ● Affordability ● Water supply
NDN Fund	A Native CDFI and the lending arm of the NDN Collective. Providing financing for predevelopment, bridge, and large-scale Indigenous regenerative development projects that dramatically scale up investment and shift all decision-making power to Indigenous peoples. Could include financing for water & sewer.	<ul style="list-style-type: none"> ● All tribal water topics
Nonprofit Water	Non-profit wholesale water service provider designed to address consolidation needs for small water systems.	<ul style="list-style-type: none"> ● Utility consolidation
Greenprint Partners	Consulting company developing green stormwater solutions with a priority on installations in underserved communities	<ul style="list-style-type: none"> ● Stormwater
Quantified Ventures	Consulting company developing Environmental Impact Bonds and other pay-for-performance tools for municipalities and others.	<ul style="list-style-type: none"> ● Utility consolidation ● Lead pipe removal ● Affordability ● Transparency & trust ● Stormwater
Great Lakes Impact Investment Platform	Showcases sustainable investments under development or financed in the Great Lakes.	<ul style="list-style-type: none"> ● Great Lakes sustainability

Company/Fund Name	Description	Alignment with Impact Topics
Upwell Water	Providing capital to enable water solutions. Customers receive cash for existing water-related assets or pay over time for new ones. Solution partners sell with no upfront cost.	<ul style="list-style-type: none"> ● All water topics
ACCELERATORS		
Imagine H2O	A water innovation accelerator NGO that supports early-stage start-ups & deployment of their products. They help companies connect to investors, advise on business plans, and help develop roadmaps to foster company growth.	<ul style="list-style-type: none"> ● All water topics
BREW 2.0	A project of the Water Council in Milwaukee, a global hub dedicated to solving critical water challenges by driving innovation in freshwater technology and advancing water stewardship.	<ul style="list-style-type: none"> ● All water topics
Current	Headquartered in Chicago, Current collaborates with corporations, universities, nonprofits and governments to develop solutions that would be too risky or even impossible to undertake alone.	<ul style="list-style-type: none"> ● All water topics, focused on Chicago & Great Lakes
WaterStart	Based in Las Vegas, a non-profit collective of globally recognized leaders who deploy and co-fund innovative technology pilots to lower risks to implementation.	<ul style="list-style-type: none"> ● All water topics, but focused particularly on water supply issues
TechStars + TNC Sustainability Accelerator	Based in Colorado & focused on solving conservation challenges globally through for-profit ventures.	<ul style="list-style-type: none"> ● Environmental conservation topics
Elemental Excelerator	Part of the Emerson Collective, an accelerator focused on driving international growth for startups focused on climate change, & empowering CEOs to infuse equity and access into their companies.	<ul style="list-style-type: none"> ● Climate change & equity, including related water topics
TECHNOLOGY COMPANIES		
Blue Conduit	Using AI to expedite lead service line mapping.	<ul style="list-style-type: none"> ● Lead pipe removal ● Transparency & trust
Varuna	Data visualization platform for small/medium utilities, with linkage to remote sensors. Benefits are cost savings, improved prediction/analysis, and improved customer communications.	<ul style="list-style-type: none"> ● Affordability ● Transparency & trust
SimpleLab	Software platform for enviro health testing and laboratory logistics. Water quality test kit provider with insights on nationwide data.	<ul style="list-style-type: none"> ● Transparency & trust

Company/Fund Name	Description	Alignment with Impact Topics
Aquagenuity	Web- and app-based data service that: (1) provides home water testing kits; (2) Seeks to map 80% of the water systems in the US; (3) educates young people about water.	<ul style="list-style-type: none"> ● Transparency & trust
BioBot Analytics	Wastewater data analysis to track public health problems such as covid, drug use, etc.	<ul style="list-style-type: none"> ● Transparency & trust
120 Water	Provides advising, water testing kits and data management for munis, labs & consumers.	<ul style="list-style-type: none"> ● Lead pipe removal ● Transparency & trust
2nd Nature	Helping communities manage their stormwater assets.	<ul style="list-style-type: none"> ● Stormwater
Stormsensor	Cloud-based, networked sensors & software that maps how water moves through cities' systems in real time.	<ul style="list-style-type: none"> ● Stormwater ● Affordability
Cloud to Street	Uses satellites and AI to track floods in near real-time.	<ul style="list-style-type: none"> ● Stormwater ● Affordability
Natural Systems Utilities	Innovative stormwater management and on-site water reuse utilizing Design-Build, Design-Build-Operate and Design-Build-Own-Operate-Maintain approaches.	<ul style="list-style-type: none"> ● Utility consolidation ● Affordability ● Stormwater
Opti RTC	Cloud-based stormwater management for individual properties, which can be combined for a Smart Watershed Network Management for a community.	<ul style="list-style-type: none"> ● Transparency & trust ● Stormwater
Source	Hydro panels powered by the sun that extract drinking water from the air.	<ul style="list-style-type: none"> ● Utility consolidation ● Affordability ● Water supply
Fracta	Rapidly identify weaknesses in water pipe networks, understand the impact of an unplanned failure & improve the overall reliability of muni infrastructure.	<ul style="list-style-type: none"> ● Affordability
Zilper	Trenchless technology to monitor & repair pipes	<ul style="list-style-type: none"> ● Affordability
DropCountr	Customer engagement and analytics for utilities.	<ul style="list-style-type: none"> ● Affordability
Mapistry	Stormwater & flood control, digital water	<ul style="list-style-type: none"> ● Stormwater ● Affordability
NJBsoft	Regulatory compliance & data management software	<ul style="list-style-type: none"> ● Stormwater ● Affordability
AquaAffirm	Low-cost digital sensors for rapid measurement of arsenic & fluoride, & software platform that facilitates planning, mapping & optimization for infrastructure projects.	<ul style="list-style-type: none"> ● Affordability ● Transparency & trust

Company/Fund Name	Description	Alignment with Impact Topics
Orb	Real-time detection for utilities of pathogens & contaminants in water.	<ul style="list-style-type: none"> ● Affordability ● Transparency & trust
Space Ages Labs	Wireless technology for utilities to monitor & maintain water assets.	<ul style="list-style-type: none"> ● Affordability
Smarter Homes	Smart water meters for high rise apartments that enable leak detection & individual billing.	<ul style="list-style-type: none"> ● Affordability
Ziptility	Infrastructure management app for water operators.	<ul style="list-style-type: none"> ● Affordability ● Transparency & trust
Lotic Labs	Weather-related risk management for water & wastewater utilities.	<ul style="list-style-type: none"> ● Affordability ● Stormwater
INVESTMENT FUNDS		
Sciens Asset Management, Sustainable Water Opportunities Fund	Focused on: (1) Replacement / refurbishment of aging infrastructure; (2) increasing water reclamation; (3) Improving company managerial capabilities to meet regulatory and environmental standards; & (4) consolidating the industry to overcome inefficiencies of fragmentation.	<ul style="list-style-type: none"> ● Utility consolidation
Mazarine	Investing pool supporting early-stage innovations that improve efficiency & manage water & wastewater risk.	<ul style="list-style-type: none"> ● All water topics
Am Fam Institute	Corporate fund that invests in water, climate & disaster investments.	<ul style="list-style-type: none"> ● All water topics
Burnt Island Ventures	New fund that invests in the best entrepreneurs in water, worldwide.	<ul style="list-style-type: none"> ● All water topics
Echo River Capital	New fund that Invests in impactful water-related technologies that improve human health, the environment and urban resilience. Focus is on next generation digital solutions, distributed wastewater treatment & reuse, drinking water, & decarbonization of water systems.	<ul style="list-style-type: none"> ● All water topics
Colorado River Fund	Invest in technologies addressing water scarcity and quality issues in the Colorado River basin.	<ul style="list-style-type: none"> ● Western water quality & scarcity
Water Equity	Global water health & equity fund.	<ul style="list-style-type: none"> ● All water topics
Cycle Capital - BleuImpact Fund	Water tech impact fund.	<ul style="list-style-type: none"> ● All water topics
Urban Innovation Fund	A venture capital firm that provides seed capital & regulatory support to entrepreneurs shaping the future of cities	<ul style="list-style-type: none"> ● All municipal water topics

Company/Fund Name	Description	Alignment with Impact Topics
Equilibrium Capital	Invests in distributed infrastructure for water, waste & energy to address core business needs including environmental compliance, cost reductions, decarbonization initiatives, infrastructure resilience & climate risk mitigation.	● All water topics
Ecosystem Integrity Fund	Early growth stage investor in companies contributing to environmental sustainability.	● All water topics
BOND ASSET MANAGERS		
Breckinridge Capital Advisors	A Boston-based, independently owned asset manager specializing in investment grade fixed income portfolio management.	● All municipal water topics
Community Capital Management	An investment manager seeking to deliver superior risk-adjusted returns through investment strategies that contribute to positive environmental & social outcomes.	● All municipal water topics
Alliance Bernstein	A global asset management firm providing investment management & research services worldwide to institutional, high-net-worth & retail investors.	● All municipal water topics
Allianz Global Investors	The firm's expertise covers the developed & emerging markets as well as public & private markets.	● All municipal water topics
Adasina Social Capital	Bond fund that invests with a screen of racial justice, climate justice, gender justice & economic justice.	● All municipal water topics
PUBLIC EQUITIES		
Fidelity Water Sustainability Fund	Invests in companies helping to deliver safe, reliable, & easily accessible water.	● All water topics
Calvert Global Water Fund	The Fund seeks to track the performance of the Calvert Global Water Research Index.	● All water topics
Xylem Water Solutions	A leading water technology company committed to "solving water" by creating innovative & smart technology solutions to meet the world's water, wastewater & energy needs.	● All water topics

APPENDIX III - INVESTMENT OPTIONS FOR IMPACT PRIORITY AREAS

Investment Options for Impact Priority Areas	Consolidation	Lead Pipe Removal	Water Rates & Affordability	Data Tech to Increase Trust	Reduce Inequities of Stormwater Impacts	Endowment? (Y/N)	Impact Alignment (Strong, Medium, Weak)
Grants	Technical Assistance (TA) & facilitation of city-city dialogues; TA for accessing public funding streams; Predevelopment funding; Advocate for policies that mandate / create urgency for consolidation	Policy reforms creating urgency for removal; TA for small/underserved communities; pipe location mapping support; funding for private line replacement	Policy reforms; technical analysis; direct customer assistance	Innovation accelerators; deployment of tech in underserved communities	TA to develop co-benefit financing or other pay for performance solutions; Policy reforms making green solutions more cost effective; studies on value of co-benefits; best practices documentation; TA for accessing public funding streams; remediation of resulting sewer backups in homes	N	Strong
Guarantees	N/A	N/A	N/A	N/A	N/A	N	Weak
Project-Level Debt	Revolving loans for predevelopment & project financing	Revolving loans for predevelopment & replacement financing	Project financing for tech that will reduce utility costs, paid through cost savings	Revolving fund to finance deployment of new tech in underserved communities	Revolving fund to support predevelopment & project financing; innovative project financing such as pay for performance	N	Strong
Venture (funds or direct company equity)	Funds focused on consolidation; companies developing distributed water treatment technologies	Consulting companies working with utilities; tech companies supporting mapping/ replacement	Tech companies that reduce costs to utilities; Consulting companies working with utilities; tech companies addressing payment complexity	Tech companies increasing data availability/transparency	Tech companies making green stormwater infrastructure easier to install, maintain or manage	N	Strong
Public Equities	N/A	N/A	N/A	Public companies such Xylem that provide exits for small new tech companies	N/A	Y	Weak
Municipal Bonds	Finance consolidation costs	Finance pipe replacement	Finance cost saving investments that could pay for themselves & reduce strain on rates	N/A	Finance installation of green stormwater infrastructure	Y	Medium
Illustrative Investments	Sciens Sustainable Water Opportunities Fund; RCAP; Nonprofit Water	Blue Conduit; 120Water	Varuna; Zipility	Simplelabs; Aquagenuity, BioBot Analytics, Xylem	Greenprint Partners; 2nd Nature; Stormsensor; Quantified Ventures	N/A	N/A
Commonly Cited Challenges	Long lead time to develop trust between neighboring communities; lack of funding for planning, facilitation, predevelopment; risk to larger community from bringing in a smaller community	Lack of predevelopment funding limits the ability of smaller systems to pursue capital improvement projects; policies make it hard for cities to fund private line replacement; lack of info where lead lines are located makes replacement more expensive	"Trilemma" of financing infrastructure in lower credit quality communities while keeping rates affordable & maintaining credit rating	Munis don't have the technology to enable more real time reporting on water quality etc.; Utilities can be hesitant to deploy tech that puts more info into public hands	Green stormwater solutions are cheaper to install but more expensive to maintain; Utility pays for stormwater management but doesn't directly benefit from community co-benefits of GSI	N/A	N/A