



Measuring Up:

Grading drinking water quality, affordability, and transparency practices in Allegheny County Water Systems

July 2023

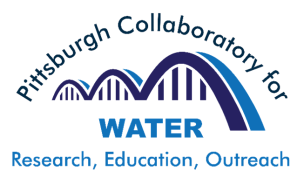


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Preface

In April 2021, Women for a Healthy Environment published “Something’s in the Water: A System Analysis on Quality and Transparency in Allegheny County Community Water Systems”. This report, based on two years of effort, aimed to “identify issues faced by ratepayers, water systems, and public health officials alike.” Among the findings of 2021 report were alarming indicators of inequities in access to clean, affordable drinking water across communities and relatedly, vast differences in practices used by community water systems to serve their ratepayers.

As a consequence of these findings, a new collaboration between Women for a Healthy Environment and the Pittsburgh Water Collaboratory was formed to build upon these results and investigate whether 1) affordable and clean water was available to all residents across Allegheny County’s 36 community water systems, and 2) the extent to which these community water systems employ transparent practices in interacting with their ratepayers.

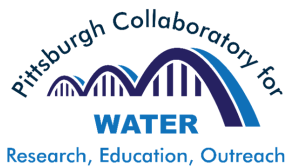
To advance equitable access to clean and affordable drinking water across all of Allegheny County’s residents, our team created standardized metrics to rate the performance of 36 individual water systems with respect to affordability, transparency, and water quality. Ratings were based on new information solicited from Allegheny County water systems and prior data collected in 2020 as part of the “Somethings in the Water Report”. This information and data were distilled into report cards for 36 individual community water systems with an environmental justice lens. This report documents that process, details the findings, and provides recommendations to move forward.

Sincerely,

Women for a Healthy Environment and the Pittsburgh Water Collaboratory Report Team

About the Report Team

The Pittsburgh Collaboratory for Water Research, Education, and Outreach (Water Collaboratory) is a network of over 100 partner organizations and 350 individuals including undergraduate and graduate students, researchers, and approximately 35 faculty affiliates from the Schools of Health Sciences, Swanson School of Engineering, Dietrich School of Arts and Sciences, and the Graduate School of Public and International Affairs at the University of Pittsburgh. The Water Collaboratory aims to improve the quality of the region's water resources by inspiring collaborations, communicating science, formulating well-informed solutions, and ultimately improving ecological and human health in the Upper Ohio River region.



Women for a Healthy Environment (WHE), a nonprofit headquartered in Pittsburgh, educates individuals about environmental risks to human health, provides action steps communities can take to mitigate those risks, and advocates for solutions that better protect the region. The organization's three program areas are: Healthy Homes, Healthy Schools, and Healthy Early Learning Centers. Through educational programming, technical assistance, coalition-building, and advocacy, WHE staff addresses environmental exposures that impact the health of populations, with a focus on working with environmental justice communities. Since 2010, WHE has directly educated over 30,000 individuals and worked with nearly 300 schools and childcare centers.



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Throughout this report, there are many uses of the term "we". This term, defined by our team, represents the team members above with the collective expertise of each member incorporated into the text.

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Our team is particularly appreciative of the water systems who chose to engage with us during our data gathering phase. Those systems are listed below and their decision to interact with us and engage these challenges has improved the report card process fundamentally.

Aleppo Township Authority
Aspinwall Borough Water Department
Blawnox Borough Water Department
Braddock Borough Water Authority
Cheswick Borough Water Department
Duquesne Water Department
East Deer Township Water Department
Edgeworth Borough Municipal Authority
Hampton Shaler Water Authority
Harrison Township Water Authority

Moon Township Municipal Authority
Pittsburgh Water and Sewer Authority
Robinson Township Municipal Authority
Tarentum Borough Water Department
Municipal Authority of Westmoreland
County- McKeesport
Western Allegheny County Municipal
Authority
Wilkesburg-Penn Joint Water Authority

We also would like to acknowledge more broadly the employees throughout Allegheny County employed by water systems whose hard work provides County residents with clean and safe drinking water. We acknowledge it is an arduous process, and while we document room for improvement, report results do not erase the hard and careful work all systems evaluated in this report do every day.

We thank Scot Wallace for helping us transform our data into visually compelling report cards and report.

With the focus on source water protection, the work of Tom McCaffrey (PA DEP) consistently came up as a regional champion for source water protection planning. The high grades systems received in this area are a testament to Tom's work on the issue.

Section 1: Introduction

Water is critical for sustaining life. Humans can only survive a few days without water. Yet, the human right to affordable, accessible, and clean drinking water remains far from realized, including here in Allegheny County. Decades of deferred water infrastructure maintenance and policies that do not center racial and economic justice have contributed to drinking water inequities within and among regional systems.

80% of water systems reported detectable levels of lead in their drinking water in their 2019 Consumer Confidence Reports...

In Spring 2021, Women for a Healthy Environment (WHE) published the report *Something's in the Water: A System Analysis on Quality and Transparency in Allegheny County Community Water Systems*. Report findings were based on data collected through a March 2020 Right to Know request sent to the Allegheny County's 36 water systems, as well as an analysis of publicly available data from the Pennsylvania Department of Environmental Protection's (PA DEP) Drinking Water Database and water system websites. The analysis examined water systems' operational and communication capacities, public accessibility and transparency of information, compliance with drinking water quality standards, and strategies to reduce lead in drinking water exposure. The report's key findings were that:

- Most water systems in Allegheny County are publicly owned;
- Water systems serving Allegheny County may be understaffed and under-resourced;
- In 2016, more than half of the water systems had water quality-related violations (this includes administrative and contamination violations);
- 80% of water systems reported detectable levels of lead in their drinking water in their 2019 Consumer Confidence Reports; and
- Water systems could improve their accessibility and risk communication to ratepayers.

The report provided key recommendations for ratepayers, community water systems and the Commonwealth of Pennsylvania. One of the eight community water system recommendations ultimately urged Allegheny County community water systems, ratepayers, and public health entities to collaborate more broadly. Such collaborations would help develop sustainable solutions that increase water system capacity and transparency while protecting the quality and affordability of community drinking water. Another suggested strengthening technical, financial, and managerial capacities of community water systems. While advances are being made to improve regional water quality and increase transparency, further efforts are required to accelerate transformative collaboration among water systems.

Objectives

To address this need, in September 2021, the Water Collaboratory and WHE partnered to build upon the findings of the *Something's in the Water* report. In broad terms, this partnership explored and evaluated best governance practices that center environmental justice and serve community needs for water systems in Allegheny County. Our objectives included the following:

- Evaluate how water system operations impact equitable access to clean and affordable drinking water;
- Assemble best practices used nationally and globally to improve transparency, affordability, and water quality;
- Develop actionable strategies for water systems to improve water access, affordability, and quality;
- Objectively compare performance of Allegheny County water systems across a defined suite of metrics to advance uniform standards;
- Accelerate transformation of water systems toward more equitable and uniform practices that protect human health;
- Initiate conversations to build public trust between residents and water systems; and
- Reduce inequities in access to clean and affordable drinking water to a level that is not harmful to the public.

The terms “water equity”, “human right to water”, and “water justice” can all have different meanings and definitions, depending on how the term is being used. Here, we think of water equity “as policies that reflect the principles of ecological, social, and distributive justice in order to ensure the conservation and fair and equal distribution of water for current and future generations.”¹

Specifically, WHE and the Water Collaboratory worked together to create “Water System Report Cards” for each of the 36 community water systems in Allegheny County. We aim to provide system managers and county residents with the tools they require to track progress toward making clean drinking water available to all residents of Allegheny County. The report cards evaluate the differences in practices implemented by community water systems. Particular attention was focused on how water systems address ratepayers' concerns and how they disseminate information and engage the public. While we focused this report in Allegheny County, these issues are not uncommon in the United States.

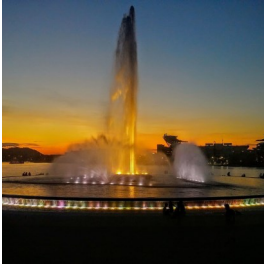
This report focuses on three areas: water affordability, transparency, and water quality, each of which are important principles foundational to the human right to water. While these are not the only principles for ensuring the human right to water, the justification for choosing these three areas is described in Section 2. By assembling and evaluating the data for all water systems in Allegheny County, we aim to help community water systems move collectively toward a common set of best practices protective of human health and in accordance with the right to access clean and affordable drinking water.

¹ Joanna Robinson, *Contested Water, The Struggle Against Water Privatization in the United States and Canada*. (Cambridge, Massachusetts: MIT Press, 2014), pg 34, <http://www.jstor.org/stable/j.ctt5vjrk.1>.

Rationale

Global Human Rights, Local Implementation

The United Nations General Assembly recognized the human right to water and sanitation on June 28, 2010 through Resolution 64/292.² The United Nations Sustainable Development Goals (SDGs) also established concrete targets and timeframes for achieving this right, yet these global standards and expectations remain far from realized.³ Moreover, the COVID-19 pandemic has exposed failures in the provision of public health measures and demonstrated the urgent need for communities to prioritize intersecting human rights and social equity in public policies. Movements locally, nationally, and globally have demanded that water is not shut off during pandemic conditions to prevent disease transmission.



Although the United States does not recognize the right to water, there is regulatory oversight at federal, state, and local levels. Federal law sets some standards for access to clean water including through the Safe Drinking Water Act and the Clean Water Act. At the state level, the Pennsylvania Constitution recognizes the right to “pure water” (Article 1, Section 27) and connects water quality with the right to access safe and clean drinking water.⁴ This highlights the need to connect water affordability with water quality and to move beyond existing regulatory frameworks that do not center human health (Section 2). The state enforces the Safe Drinking Water program through the PA DEP.⁵



At the County level, the Allegheny County Health Department’s water pollution control division oversees water regulation related to sewage treatment and conveyance, but its scope in addressing drinking water quality is relatively limited.⁶ The County faces fundamental water challenges, particularly aged infrastructure, degraded water quality, and decreasing affordability.⁷ Allegheny County water systems are being challenged by deregulation and privatization, as well as the financial consequences of deferred maintenance. Moreover, failing and antiquated infrastructure exacerbated by changing precipitation patterns has led to water quality impairments.^{8,9}

The City of Pittsburgh (in Allegheny County) has both built infrastructure and social challenges surrounding water. It has been named as one of the country’s most livable cities and positioned

² United Nations, “The human right to water and sanitation,” Accessed Feb. 6, 2023, https://www.un.org/waterforlifedecade/human_right_to_water.shtml.

³ United Nations, “The 17 Goals,” Accessed Feb. 6, 2023, <https://sdgs.un.org/goals>.

⁴ Pennsylvania General Assembly, *Natural resources and the public estate*, Article 1 §27 (Pennsylvania May 18, 1971), <https://www.legis.state.pa.us/cfdocs/legis/LI/consCheck.cfm?txtType=HTM&ttl=00&div=0&chpt=1&sctn=27&subctn=0>.

⁵ Allegheny County, “Solid Waste Management and Water-Related Programs,” Accessed on Feb. 6, 2023, <https://www.alleghenycounty.us/Health-Department/Programs/Waste--and-Water-Related/Waste--and-Water-Related-Programs.aspx>.

⁶ Allegheny County Health Department, *Plan for a Healthier Allegheny 2023-2027* (Pittsburgh: Allegheny County Health Department), 2023 https://www.alleghenycounty.us/uploadedFiles/Allegheny_Home/Health_Department/Resources/Data_and_Reporting/Chronic_Disease_Epidemiology/Allegheny_County_PHA.pdf

⁷ Marcela González Rivas, “A Tale of Two Water Operators: Legacies of Public Versus Private Amidst Covid19 in Pittsburgh,” in *Public Water and Covid-19: Dark Clouds and Silver Linings*, ed David A. McDonald et al., (Kingston: Municipal Services Project and Amsterdam: Transnational Institute, 2020) pg. 291-310, https://www.tni.org/files/public-water-covid-19_chapter_18.pdf.

itself as a city with a strong commitment to sustainable development.¹⁰ City officials have pledged to make Pittsburgh a leader in municipal efforts to implement the United Nations SDGs, which include equitable access to clean drinking water and sanitation. At the same time, the City has been criticized as being the worst locale in the country for Black women, and gender, race, and class inequalities persist.¹¹

Environmental Justice Defined

This report, like its predecessor, seeks to draw attention to the inequities caused by environmental injustices. The PA DEP recognizes that Environmental Justice (EJ):

embodies the principles that communities and populations should not be disproportionately exposed to adverse environmental impacts. Historically, minority and low-income Pennsylvanians have been forced to bear a disproportionate share of adverse environmental impacts. It is our duty to ensure that all Pennsylvanians, especially those that have typically been disenfranchised, are meaningfully involved in the decisions that affect their environment and that all communities are not unjustly and/or disproportionately burden[ed] with adverse environmental impacts. Simply put, environmental justice ensures that everyone has an equal seat at the table.¹²

In this report we adopt the PA DEP and the U.S. Environmental Protection Agency (US EPA) definition of EJ communities as “any census tract where 20 percent or more individuals live in poverty, and/or 30 percent or more of the population is minority.”¹³ In order to advance the right to clean and affordable drinking water in Allegheny County, it is essential to understand in the impacts of environmental injustice. Clean water is an invaluable resource where control and power dynamics may create, or limit, the conditions necessary for people to access uncontaminated drinking water.

Drinking Water Infrastructure

The deterioration of safe and affordable access to water in the U.S. has recently gained attention following state of emergency declarations in Flint, Michigan and Jackson, Mississippi.^{14, 15} This problem has been more than a century in the making, with decades of disinvestment in public water infrastructure and, in some jurisdictions, racial and environmental injustice. Allegheny County is especially challenged by the need to address its

¹⁰ Sharon Ebersson, “Pittsburgh Is The No. 2 Most Livable City in America,” *Pittsburgh Post-Gazette*, August 20, 2018, <https://www.postgazette.com/local/neighborhood/2018/08/20/Pittsburgh-No-2-most-livable-city-America-32-globalliveability-index-Economist/stories/201808200090>.

¹¹ Junia Howell et al, *Pittsburgh's Inequality across Gender and Race* (Pittsburgh: City of Pittsburgh's Gender Equity Commission), https://www.socialwork.pitt.edu/sites/default/files/pittsburghs_inequality_across_gender_and_race_07_19_20_compressed.pdf

¹² Department of Environmental Protection, “Office of Environmental, Justice,” Accessed Feb. 6, 2023, <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/pages/default.aspx>.

¹³ In the scholarly literature on EJ, the term “minority” is generally never used, since it is problematic as it reifies distinction of inferiority and superiority/ supremacy. However, within the federal and state definitions of EJ communities, that is the language used, and so we use it here.

¹⁴ Merrit Kennedy, “Lead-Laced Water in Flint: A Step-By-Step Look At The Making Of A Crisis,” NPR, April 20, 2016, <https://www.npr.org/sections/thetwo-way/2016/04/20/465545378/lead-laced-water-in-flint-a-step-by-step-look-at-the-makings-of-a-crisis>.

¹⁵ Jason Breslow, “The water crisis in Jackson follows years of failure to fix an aging system,” NPR, August 31, 2022, <https://>

Most of Pennsylvania's public drinking water systems are struggling to fund projects to meet their replacement goals as well as new regulations.

complicated combined sewer system and recent lead in drinking water violations.¹⁶ Deferred maintenance and lack of investment has placed regional drinking water systems in dire need of infrastructure improvements. In 2022, the American Society of Civil Engineers released its *Report Card for Pennsylvania's Infrastructure* and graded drinking water as a "D", stating:

Most of Pennsylvania's public drinking water systems are struggling to fund projects to meet their replacement goals as well as new regulations. That's despite recent investment in main replacement and improvement in identifying vulnerability to failures for prioritization of repairs. Over the next 10 years, Pennsylvania's public water systems are projected to have a \$10.2 billion funding gap, a number only very slightly offset with recent federal actions to provide infrastructure funding. In addition, there remain substantial amounts of lead service lines posing risk to public health, particularly for underserved communities.¹⁷

Limited federal funding and a lack of agency guidance has led to a critical situation for community water systems and our nation's water infrastructure, though recent developments are promising. In 2021, President Biden signed the American Rescue Plan Act and the Bipartisan Infrastructure Law into effect, which include historic funding for water infrastructure.^{18,19} The Inflation Reduction Act, passed in August 2022, also has funding to support domestic water programs in disadvantaged communities.²⁰ These funds may be used for a wide variety of initiatives including drinking water, wastewater, and stormwater improvements, as well as lead service line replacements. The Bipartisan Infrastructure Law contains the largest infrastructure investment in water ever made by the federal government at \$50 billion.²¹ In addition, the Biden-Harris administration and the US EPA are working together on the Lead Service Line Replacement Accelerators initiative that aims to remove and replace 100% of lead service lines.²² At the state level, the Biden-Harris administration also announced \$265 million available to address drinking water infrastructure upgrades.²³ These actions are an essential first step in correcting decades of disinvestment to ensure transparent, affordable, and clean drinking water governance.

¹⁶ Oliver Morrison, "The untold story of Pittsburgh's water crisis and the likely future of \$300 water bills," *PublicSource*, October 18, 2021, <https://www.publicsource.org/pwsa-pittsburgh-crisis-turnaround-infrastructure-spending-rates-water-bills/>.

¹⁷ Pennsylvania State Council of the American Society of Civil Engineers, *2022 Report Card for Pennsylvania's Infrastructure*, (Pennsylvania: American Society of Civil Engineers, 2022), pg.36 <https://infrastructurereportcard.org/wp-content/uploads/2016/10/PA-Report-Card-2022.pdf>.

¹⁸ National Conference of State Legislatures, "ARPA State Fiscal Recovery Fund Allocations Dashboard," Accessed Feb 6, 2023, <https://app.powerbi.com/view?r=eyJrjoiMmQ2NDRiNDYtN2NkZC00OTE2LThjYzQyYjAzNTE2ZDRjZWFiIiwidCI6IjM4MmZiOGIwLTRkYzMtNDkEwNy04MGJkLTM1OTVlMjQzMmZlZSIsmMiOjZ9>.

¹⁹ Environmental Protection Agency, "Water Infrastructure Investments," Accessed Feb. 6, 2023, <https://www.epa.gov/infrastructure/water-infrastructure-investments>.

²⁰ The White House, *Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action*, (Washington, D.C.: 2023), <https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf>.

²¹ Environmental Protection Agency, "Water Infrastructure Investments."

²² Environmental Protection Agency, "EPA Launches New Initiative to Accelerate Lead Pipe Replacement to Protect Underserved Communities," Accessed Feb. 6, 2023, <https://www.epa.gov/newsreleases/epa-launches-new-initiative-accelerate-lead-pipe-replacement-protect-underserved>.

Water privatization, public-private partnerships, and remunicipalization

Historically, in the U.S. public water systems have helped ensure and expand access to safe drinking water, diminishing the risk for disease and death. Public water is— and has always been— a core function in public health for infectious disease prevention, a point highlighted by the COVID-19 pandemic.²⁴ However, not all water systems are truly public.

Ownership structure and public oversight of water systems are varied. Privatization, including private-public partnerships, is the transfer of publicly owned systems (e.g., parking, water, energy) to private ownership. There are three common types of water systems in the United States: investor-owned, authority, and municipal (Figure 1). In this report, we define public water systems as authority or municipal-owned, and private water systems as investor-owned. In water systems, privatization can diminish the transparency of operations and limit affordability programs such as moratoria on shut-offs. For example, board meetings are not open to the public. Private ownership is also associated with higher water prices in the U.S. (approximately \$5.25 per 1,000 gallons from a public system versus \$8.33 for 1,000 gallons from a private system).²⁵ In Pennsylvania alone, privatized water systems charged 84% more per gallon than public systems; in New Jersey, people served by private systems pay 79% more per gallon.²⁶ Across the U.S., the main factors contributing to higher water prices are: private water ownership, state regulations favorable to private interests, drought, and aging infrastructure.²⁷

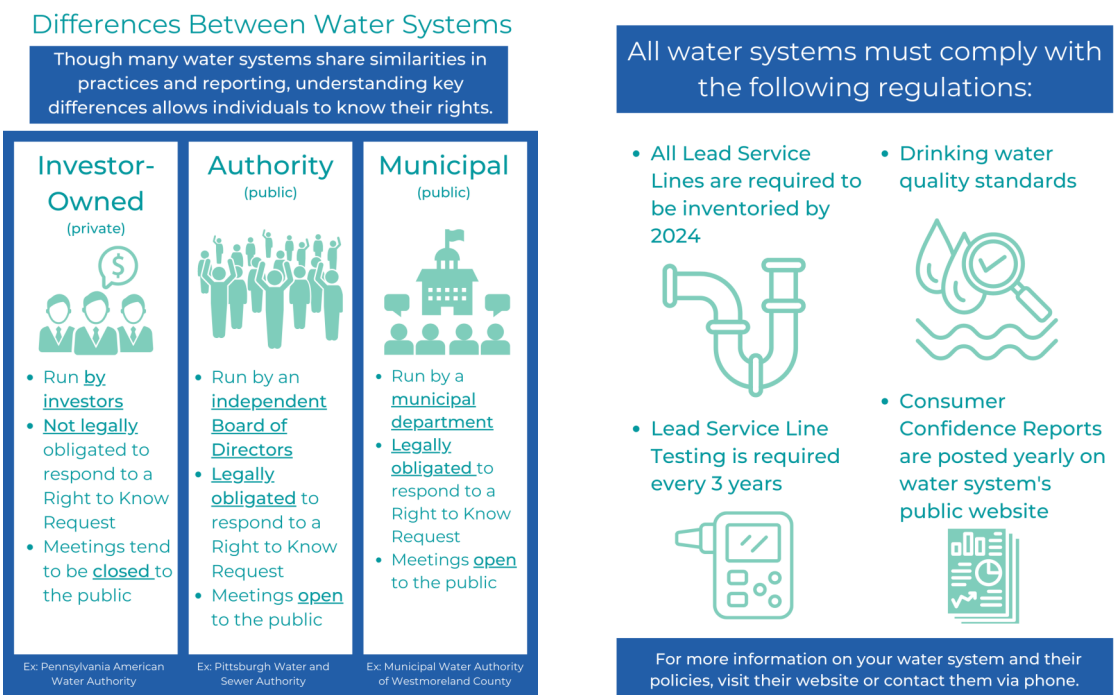


Figure 1 :The differences and similarities between different types of water systems. Note – we define public water systems as being authority or municipal owned and private water systems as investor-owned.

²⁴ David McDonald et al (eds), *Public Water and Covid-19: Dark Clouds and Silver Linings*. (Kingston: Municipal Services Project and Amsterdam: Transnational Institute, 2020), <https://www.tni.org/files/publication-downloads/public-water-covid-19.pdf>.

²⁵ Food & Water Watch, "Water Privatization: Facts and Figures," Accessed on Feb. 6, 2023, <https://www.foodandwaterwatch.org/2015/08/02/water-privatization-facts-and-figures/>.

²⁶ Food and Water Watch, *The State of Public Water in The United States*, (Washington, D.C.: Food and Water Watch, 2016), https://foodandwaterwatch.org/wp-content/uploads/2021/03/report_state_of_public_water.pdf.

²⁷ X. Zhang et al., "Water pricing and affordability in the US: public vs. private ownership," *Water Policy* (2022): <https://doi.org/10.2166/wp.2022.283>.



At the global scale, remunicipalization of systems, a process where privatized systems are returned to public ownership, is increasing. Remunicipalization is not necessarily evident in southwestern Pennsylvania, stemming from the fact that most water systems remain public. However, some Pennsylvania water systems, particularly in the eastern half of the state, continue to privatize.²⁸ This global trend of remunicipalization suggests that the privatization that started in the 1980s is slowing or reversing.^{29,30} There are various reasons for the global trend of remunicipalization besides increased cost and reduced quality under privatization.^{31,32,33} Public water offers more accountability and transparency and more room for community participation in the governance structure.^{34,35}

²⁸ M. Woodacre and W. Ferguson, "Big water companies are gobbling up public water systems," *Philadelphia Inquirer*, March 29, 2022, <https://www.inquirer.com/opinion/pennsylvania-water-privatization-rate-increases-20220329.html>.

²⁹ David A. McDonald, "Remunicipalization: The future of water services?," *Geoforum* Volume 91, (2018): Pgs 47-56, <https://doi.org/10.1016/j.geoforum.2018.02.027>.

³⁰ David A. McDonald, "Will the empire strike back? Powerbrokers and remunicipalisation in the water sector," *Water Alternatives* Volume 12, No. 2 (2019): pgs 348-359, <https://www.water-alternatives.org/index.php/alldoc/articles/vol12/v12issue3/530-a12-2-13/file>.

³¹ David A. McDonald and E. Swyngedouw, "The new water wars: Struggles for remunicipalisation," *Water Alternatives* Volume 12, No. 2 (2019): 322-333, <https://www.water-alternatives.org/index.php/alldoc/articles/vol12/v12issue3/528-a12-2-11/file>.

³² Germa Bel, "Public versus private water delivery, remunicipalization and water tariffs," *Utilities Policy* Volume 62 (2020): <https://www.sciencedirect.com/science/article/abs/pii/S0957178719303352>.

³³ Isaac Wait & W. Petrie, "Comparison of water pricing for publicly and privately owned water systems in the United States," *Water International* Volume 42, No. 8 (2017): 967-980, <https://www.tandfonline.com/doi/abs/10.1080/02508060.2017.1406782>.

³⁴ Miriam Planas and Juan Martinez, "A new water culture: Catalonia's public co-governance model in the making," in *The Future is Public: Towards Democratic Ownership of Public Services*, ed. S. Kishimoto, L. Steinfort, and O. Petitjean (Amsterdam, The Netherlands: Transnational Institute, 2020), 153-164, https://www.tni.org/files/futureispublic_chapter_10.pdf.

³⁵ E. Lobina & D. Hall, "Public sector alternatives to water supply and sewerage privatization: case studies," *International Journal of Water Resources Development* Volume 16, No. 1 (2000): 35-55, <https://www.tandfonline.com/doi/abs/10.1080/07900620048554>.

Public systems are not inherently accountable and transparent to the public, but in comparison to privately run systems, there is more space for residents to advocate for transparency and accountability.^{36, 37, 38, 39} We recognize that capacity varies widely across systems and some best practices are difficult to achieve even in large, well-funded systems. This variability has been exacerbated by a historical 77% reduction in federal funding for water infrastructure between 1977 and 2017.⁴⁰ Although the passage of Bipartisan Infrastructure Law, Inflation Reduction Act, and the American Rescue Plan Act mark a distinct change, continued funding is required to reverse decades of disinvestment and deferred maintenance.⁴¹

Section 2: Our Vision and Expectations for Water Governance Practice

We envision water systems that are transparent, affordable, and healthy. Realizing that vision requires an understanding that both theory and practice influence local water system governance. Here, we summarize perspectives in academia, policy, community, and system operations on three topic areas: transparency, affordability, and water quality. We define and apply concepts and knowledge about transparency, water affordability, and water quality from the global, national, and local scale, to outline our vision for equitable water practices. Because a complete analysis of all listed expectations is outside the scope of this project, our report and grading focuses on high priority aspects of each of the topic areas described below.

Transparency

Transparency in Water Governance

Transparency in water governance has been examined at a global scale.^{42,43} The Organization for Economic Co-operation and Development (OECD), an international organization focused on economic progress, released 12 Principles on Water Governance in 2015. These principles are rooted in the United Nations good governance principles and stress the need to enhance trust and engagement in “good governance” by incorporating legitimacy, transparency, accountability, and human rights.^{44,45} The OECD 5th and 9th principles of water governance,

³⁶ M. Subramaniam, “Contesting Water Rights: Local, State, and Global Struggles,” *Springer*, (2018), <https://link.springer.com/book/10.1007/978-3-319-74627-2>.

³⁷ George Homsy and Mildred Warner, “Does public ownership of systems matter for local government water policies?,” *Utilities Policy* Volume 64, <https://doi.org/10.1016/j.jup.2020.101057>.

³⁸ Satoko Kishimoto and Oliver Petitjean eds, *Reclaiming public services: how cities and citizens are turning back privatization*, (Amsterdam: Transnational Institute, 2017), <https://www.tni.org/en/publication/reclaiming-public-services>.

³⁹ Satoko Kishimoto et al, “Introduction,” In *The Future is Public: Towards Democratic Ownership of Public Services*, Edited by Kishimoto Satoko et al., (Amsterdam and Paris: Transnational Institute, 2020), https://www.tni.org/files/futureispublic_intro.pdf.

⁴⁰ Congressional Budget Office, *Public Spending on Transportation and Water Infrastructure, 1956 to 2017* (Washington, D.C.: Congressional Budget Office, 2018), <https://www.cbo.gov/publication/54539>.

⁴¹ Congress.gov, “Text - H.R.3684 - 117th Congress (2021-2022): Infrastructure Investment and Jobs Act,” November 15, 2021, <https://www.congress.gov/bills/117th-congress/house-bill/3684/text>.

⁴² Susana Neto and Jeff Camkin, “Transparency, regional diversity, and capacity building: cornerstones for trust and engagement in good water governance,” *Water International* Volume 47, no. 2 (2022): 238-256, <https://doi.org/10.1080/02508060.2022.2037850>.

⁴³ Susana Neto et al, “OECD principles on water governance in practice: an assessment of existing frameworks in Europe, Asia-Pacific, Africa and South America,” *Water International* Volume 43, no. 1 (2017): 60-89, <https://doi.org/10.1080/02508060.2018.1402650>.

⁴⁴ A. Jiménez et al, “Unpacking Water Governance: A Framework for Practitioners,” *Stockholm International Water Institute* Volume 12, No. 3 (2020): 827, <https://doi.org/10.3390/w12030827>.

⁴⁵⁻⁴⁶ Organisation for Economic Co-operation and Development, *OECD Principles on Water Governance*, (Paris: Organisation for Economic Co-operation and Development, 2015), <https://www.oecd.org/cfe/regionaldevelopment/OECD-Principles-on-Water-Governance.pdf> <https://www.oecd.org/cfe/regionaldevelopment/OECD-Principles-on-Water-Governance.pdf>.

“Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making”.⁴⁶

respectively, explicitly speak to water system transparency: “Produce, update, and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy” and “Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making”.⁴⁶ Aqua Publica Europa: The European Association of Public Water Operators also list transparency and public participation as two of their guiding principles for stakeholders, as they contribute to stronger water governance.⁴⁷

Unfortunately, American’s trust in tap water is declining.⁴⁸ According to the National Health and Nutritional Examination Survey, there were persistent disparities in the consumption of tap water between 2011 and 2018, and the probability of Black and Hispanic individuals not drinking tap water increased after the Flint Water Crisis.⁴⁹ Many factors influence these perceptions, including historical government indifference toward disadvantaged communities, poorly maintained infrastructure, misinformation regarding health risks, and even legacy distrust of tap water among immigrant populations.

One way to address this declining trust is to create more participatory structures. A report titled *Closing the Water Access Gap in the United States* (by the US Water Alliance) speaks to the necessity of participation and community leadership in creating equitable water governance. The report highlights the importance of creating ways to have meaningful participation for residents, for example, by opening opportunities for residents to serve on local water and sewer board associations.⁵⁰

However, water governance bodies can have participatory structures and still exclude key community voices. To create mechanisms that include—and value—community input, we recommend the use of community advisory committees (CAC). A CAC is focused on advice and oversight, including insight from the lived experiences of community members, whereas a Board of Directors focuses on governance and fiduciary responsibilities.⁵¹

Given the history of environmental injustice in the United States and the exclusion of marginalized groups, we emphasize the importance of intentional transparency to promote meaningful participation and include all voices.⁵² Environmental justice communities too often

⁴⁶ Asher Rosinger, “Nearly 60 million Americans don't trust tap water — and it's a big problem,” *Mic*, April 15, 2021, <https://www.mic.com/life/we-dont-trust-our-tap-water-its-a-big-problem-73133049>.

⁴⁸ Asher Rosinger, Anisha Patel, and Francesca Weaks, “Examining recent trends in the racial disparity gap in tap water consumption: NHANES 2011-2018,” *Public Health Nutr.* Volume 25, no. 2 (2021): <https://doi.org/10.1017/s1368980021002603>.

⁵⁰ US Water Alliance, *Closing the Water Access Gap in the United States, A National Action Plan*, (Oakland, California: US Water Alliance, 2019), pg. 69, https://uswateralliance.org/sites/uswateralliance.org/files/publications/Closing%20the%20Water%20Access%20Gap%20in%20the%20United%20States_DIGITAL.pdf.

⁵¹ Diane Arnos et al, *Tools and Resources for Project-Based Community Advisory Boards: Community Voice and Power Sharing Guidebook*, (Washington, D.C.: Urban Institute, 2021).

“lack access to the institutions and information which are key to remedying the violations they face of their right to access clean and affordable water in sufficient quantities.”⁵³

Community participation can address a key component of these environmental injustices. When done correctly, it involves all people, regardless of race, income, gender, or geographic location, in the development, implementation, and enforcement of environmental policies, regulations, and laws. Transparency in water governance builds public trust, which is crucial given current water challenges. Without transparency there cannot be true participation, and without participation in decision making, there cannot be environmental justice.

What we mean by transparency

The concept of transparency is a key principle of the global human right to water framework.⁵⁴ Transparency refers to openness in decision-making and information that is accessible to the public with processes in place to ensure public understanding.⁵⁵ In concrete terms, we define transparency in water systems governance as:

- Open, secure, reliable, and honest two-way communication between water systems and ratepayers;
- Public access to information and ample notice to all on-going or planned projects and events;
- Explanation of consumer confidence reports when released and available on website with searchable content;
- Communication of upcoming bill changes and water affordability protections through events, newsletter, tabling, phone calls, etc.;
- Education about water in the region and what the water system is doing to protect water resources;
- Formation of a community advisory committee consisting of multiple stakeholders including content and context experts (residents);
- Public access to information to ensure public health and welfare is prioritized;
- Public ownership and operation of water systems to ensure public interest as a driving factor that increases the potential for transparency;
- Multiple options for secured billing communication (e.g. mail, text, e-mail) with language translation available;
- Easily accessible formal consumer grievance form or other method to convey issues of concern with quick response time
- Open, frequent board meetings and ability for public to observe and provide comment as concerns arise;
- Publicly posted recordings of board meetings and minutes; and
- Board member names and contact information are available on the water system’s website.

⁵³ Safe Water Alliance et al, *Racial Discrimination and Access to Safe, Affordable Water for Communities of Color in California. A Report Submitted to the Committee on the Elimination of Racial Discrimination in its 85th Session United States’ Compliance with the International Convention on the Elimination of All Forms of Racial Discrimination*, (California: Safe Water Alliance, 2014), pg 21, https://cendoc.docip.org/collect/cendocdo/index/assoc/HASHbcca/db53ed35.dir/other_INTCERD_NGOUSA_17884_E.pdfhttps://tbinternet.ohchr.org/Treaties/CERD/Shared%20Documents/USA/INT_CERD_NGO_USA_17884_E.pdf.

⁵⁴ Catarina De Albuquerque, *Realising the human rights to water and sanitation: A Handbook*, (Portugal: United Nations, 2014), https://www.ohchr.org/sites/default/files/Documents/Issues/Water/Handbook/Book2_Frameworks.pdf.

⁵⁵ A. Jiménez et al, “Unpacking Water Governance: A Framework for Practitioners,” 827.

Affordability

Affordability in Water Governance

Water challenges are complex and water affordability is a growing crisis, particularly in the United States. Rising water unaffordability is documented in multiple cities across the country—including Baltimore, Cleveland, Chicago, Oakland, and Pittsburgh—yet there are no permanent federal programs to help offset the cost of water for low-income people.^{56,57,58} Since 2010, water bills in the United States have increased by 80%, and two out of five households have trouble paying their water bills.⁵⁹ There is also an explicit connection between racism and both water affordability and access to piped water.^{60,61,62} Lack of water access may compound existing inequalities around income, class, and race. Finally, safe, accessible drinking water is connected to public safety and welfare. Expansion of affordability protections to prioritize public health, universal service, ratepayer affordability, environmental stewardship, and distributive justice is fundamental for effective affordability measures.⁶³



Because there is no national assistance program for households facing difficulties paying their water bills in the United States, existing state and local programs lack consistency in standards, eligibility requirements, assistance levels, and data reporting. For example, the current Low-Income Household Water Assistance Program (LIHWAP) is only an emergency temporary program.⁶⁴ In contrast, the Low-Income Household Energy Assistance Program (LIHEAP) is a permanent 40-year-old assistance program.⁶⁵

At the local level, many water systems still shut off water services to households and other ratepayers as a tool for maintaining water system financial health. However, water shut-offs are in direct conflict with a human right to water framework, which stipulates that the right to water is granted to everyone without discrimination.

⁵⁶ Coty Montag, *Water/Color: A Study of Race and the Water Affordability Crisis in America's Cities*, (New York, New York: Thurgood Marshall Institute at the NAACP Legal Defense & Educational Fund, 2019), https://www.naacpldf.org/wp-content/uploads/Water_Report_FULL_5_31_19_FINAL_OPT.pdf.

⁵⁷ Amy Vanderwarkerm, "Water and Environmental Justice," in *A Twenty-First Century U.S. Water Policy*, (New York: Oxford Academic, 2012), pg. 52-89, <https://doi.org/10.1093/acprof:osobl/9780199859443.003.0003>.

⁵⁸ Marcela González Rivas, "A Tale of Two Water Operators: Legacies of Public Versus Private Amidst Covid19 in Pittsburgh," pg. 291-310.

⁵⁹ Nina Lakhani, "Revealed: millions of Americans can't afford water as bills rise 80% in a decade," *The Guardian*, June 23 2020, <https://www.theguardian.com/us-news/2020/jun/23/millions-of-americans-cant-afford-water-bills-rise>.

⁶⁰ Montag, *Water/Color: A Study of Race and the Water Affordability Crisis in America's Cities*, pg 8.

⁶¹ Nina Lakhani, "People of color more likely to live without piped water in richest US cities," *The Guardian*, November 2 2020, <https://www.theguardian.com/environment/2020/nov/02/people-of-color-piped-water-us>.

⁶² Plumbing Poverty, "Plumbing poverty is the exploration of infrastructure, space, and social inequality," Accessed on Feb 6, 2023, <https://www.plumbingpoverty.org/home>.

⁶³ Janice Beecher, "Policy Note: A Universal Equity-Efficiency Model for Pricing Water," *World Scientific Publishing Company* Volume 6, No. 3 (2020): 2071001, <https://dx.doi.org/10.1142/S2382624X20710010>.

⁶⁴ Department of Human Services, "Water Assistance Program/LIHWAP," Accessed on Feb. 6, 2023, <https://www.dhs.pa.gov/Services/Assistance/Pages/LIHWAP.aspx>.

⁶⁵ Department of Human Services, "Heating Assistance/Low-Income Home Energy Assistance Program (LIHEAP)," Accessed on Feb. 6, 2023, <https://www.dhs.pa.gov/Services/Assistance/Pages/LIHWAP.aspx>.

According to the United Nations, water bills should be no more than three percent of household income to ensure low-income households can afford and pay their own bills.

The COVID-19 pandemic has worsened the affordability crisis and further highlighted the critical nature of clean drinking water access.^{66,67} As a response to the pandemic, states mandated moratoria on shut-offs, and in many cases, water systems also implemented water reconnections to ensure households had access to water.^{68,69} As pandemic policies wane, instead of shut-offs, water systems should implement affordable drinking water rates and establish programs to prevent ratepayers from falling behind. Such affordability programs include customer assistance programs, payment schedules, payment plans, suspension of late payment fees, percent-to-income pricing, grace periods or any other mechanism that makes it easier for households struggling to make payments. In addition, a simplified process of registering for these programs is important to reduce enrollment barriers.

Fee forgiveness, accumulated debt forgiveness, and income-based rates are additional programs that make it easier for households facing hardship. These alternatives address the limitations of more temporary protections that simply delay payments and postpone the financial burden on low-income households. Water debt is a threat to households' access to essential needs, including water and sanitation, economic stability, and housing. Debt accumulation can result in housing displacement, and water shut-offs can be a precursor to eviction, creating numerous threats to families' safety and stability. Thus, eliminating debt is an important component to water assistance programs. With debt forgiveness, systems can recover some costs, and the burden on the most vulnerable customers is eliminated. Beyond the reduced costs of labor from lowered termination rates and enforcement costs, debt forgiveness also provides long term community benefits resulting from more stable housing for families and improved public health from steady access to water service.

According to the United Nations, water bills should be no more than three percent of household income to ensure low-income households can afford and pay their own bills.⁷⁰ The United States stands out for the lack of federal protection commonly seen in similar countries across Europe. Other countries' actions consist of full bans on disconnections (United Kingdom); minimum daily provisions—using various types of devices, like meters (Italy); social tariffs and social funds for low-income groups (Belgium); and in the places that disconnection is permitted, it is a complicated process that requires various agencies approval (Belgium).⁷¹

The Philadelphia Tiered Assistance Program (TAP) provides an example of a more comprehensive approach to water protections in the U.S. The TAP maintains affordability for low-income households by capping water bills at different tiers, defined by a percentage of

⁶⁶ Marcela González Rivas, "A Tale of Two Water Operators: Legacies of Public Versus Private Amidst Covid19 in Pittsburgh," pg. 291-310.

⁶⁷ Nina Lakhani, "Revealed: millions of Americans can't afford water as bills rise 80% in a decade."

⁶⁸ Mildred Warner et al, "Which States and Cities Protect Their Residents from Water Disconnection in the COVID-19 pandemic?," *Utilities Policy* Volume 67 (2020): <https://doi.org/10.1016/j.jup.2020.101118>.

⁶⁹ De Albuquerque, *Realising the human rights to water and sanitation: A Handbook*, p. 29.

⁷⁰ S. Czerwinski et al, *Developing a New Framework for Community Affordability of Clean Water Services*, (Washington D.C.: National Academy of Public Administration for the EPA, 2017), p. 151, https://s3.us-west-2.amazonaws.com/napa-2021/studies/developing-a-new-framework-for-community-affordability-of-clean-water-servi/NAPA_EPA_FINAL_REPORT_110117.pdf.

⁷¹ Mildred Warner et al, "Water Equity, COVID-19 and the Role of US Cities and States," *Town Planning Review*, Vol. 92, No. 2 (2020): 221-227.

monthly household income in relation to federal poverty line.⁷² Specifically, the Philadelphia TAP tiers address income disparities as follows: participants are charged 2% of monthly income if they are earning 50% of Federal Poverty Level (FPL) or less; 2.5% of monthly income for residents making between 51 and 100% of FPL; and 3% for residents earning between 101 and 150% of FPL. This program is therefore consistent with the United Nation's affordability standard of three percent of household income.⁷³

What we mean by affordability

Water has different economic, social, and ecological values. The dynamics that arise from these various valuations of water have important implications for equity in water access. Two central aspects are the system ownership type and the resources required for the provision of services. The profit maximization driver of the private sector is often inconsistent within the human right to water framework and can put more financial burden on the ratepayer. Thus, public water systems, compared to investor-owned water systems, can result in more affordable drinking water.^{74,75} We argue water should be conceived of as a public commons and human right, and not a privatized commodity.

The literature on water affordability is extensive; however, it is challenging to apply at the local level, since there is no uniform set of affordability metrics across geographic areas, nor consensus about them.⁷⁶ We assert that water affordability should:

- Implement permanent water affordability protections such as a year-round moratorium on shut-offs, programs that provide assistance for paying bills, payment plans, water rates based on a percent of household income for low-income households or those households with low fixed incomes, etc.;
- Waive fees for late payments, disconnection and reconnection;
- Establish other forms of customer assistance programs in the short-term with a plan to work with residents and organizations to improve and expand assistance programs;
- Incorporate debt forgiveness to ensure access to water for all residents;
- Remove barriers to enrollment in affordability protection programs, including multiple ways to enroll and community-engaged outreach with access to information in community-relevant languages; and
- Rely on publicly owned and operated systems to increase the chances that affordability is prioritized instead of profit-making by private interests.

⁷² Collin Farone et al, *Best Practices for Water Assistance Programs and Water Access in Pittsburgh*, (Pittsburgh, PA: Ford Institute for Human Security, 2022), <https://www.fordinstitute.pitt.edu/sites/default/files/assets/2021-22%20Working%20Groups/2020-21%20WG%20report%20REDUCED%20-%20Closing%20the%20Water%20Gap%20Pittsburgh%20Water%20Assistance%20Programs%20Report.pdf>.

⁷³ S. Czerwinski et al, *Developing a New Framework for Community Affordability of Clean Water Services*, p. 151.

⁷⁴ Colin Brown et al, "The human right to water and sanitation: a new perspective for public policies," *Cien Saude Colet* Volume 21, No. 3 (2016):661-70, doi: 10.1590/1413-81232015213.20142015.

⁷⁵ Léo Heller, *Human rights and the privatization of water and sanitation services*, United Nations, 2020, <https://www.ohchr.org/en/calls-for-input/reports/2020/privatization-and-human-rights-water-and-sanitation-report>.

⁷⁶ J. Goddard et al, "How should water affordability be measured in the United States? A critical review," *WiredWater*. (2022), <https://doi.org/10.1002/wat2.1573>.

While a direct comparison of water rates across water systems could have been beneficial for the objectives of this report, the contrasts in system age, ratepayer expectations, and complexities of rate structures across water systems precluded an appropriate analysis.

Water Quality

Water quality and governance

To meet requirements stipulated in the Safe Drinking Water Act, the US EPA has identified constituents that should be regulated in drinking water. For the most part, these regulations are primary Maximum Contaminant Levels (MCLs) or Action Levels (ALs) and are set at the federal level.⁷⁷ States can set maximum levels lower than these national levels but cannot set standards that exceed these primary standards. MCL exceedances captured during drinking water testing requires review of drinking water purification processes and notification by the drinking water provider to its customers via the annual Community Confidence Report (CCR). Systems are mandated to give ratepayers annual notice of the CCR through various forms of communications including on their website if systems serve over 100,000 people.⁷⁸ In Pennsylvania, these exceedances and other violations are tracked statewide in the Pennsylvania Drinking Water Reporting System.⁷⁹

Source Waters

At the broadest spatial scale, one of the most effective water quality preservation strategies is the prevention of source water contamination. Source water protection is a deliberate strategy to avoid activities with a high risk of contaminating water sources in drinking water supply areas. While six water systems in Allegheny County rely on groundwater, the vast majority of the county's population relies on river water for domestic use. However, the Allegheny, Monongahela, and Ohio Rivers are influenced by large drainage areas that would require multi-state, cross-jurisdictional structures to implement comprehensive source water protection measures.

Some community water systems in Allegheny County were required by the 1996 reauthorization of the Safe Drinking Water Act to have Source Water Assessments conducted by the PA DEP Bureau of Water Supply Management in 2002 and 2003.⁸⁰ The PA DEP assessed source water protection areas for over half of Allegheny County's water systems. While the assessments were mandatory, participation in the PA DEP's Source Water Protection (SWP) Program was and continues to be optional. The resulting dilemma is summarized by PA DEP as such:



⁷⁷ Environmental Protection Agency, "National Primary Drinking Water Regulations," Accessed on Feb 6, 2023, <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>.

⁷⁸ Environmental Protection Agency, "Consumer Confidence Report Rule: A Quick Reference Guide," Accessed on Feb 6, 2023, https://www.epa.gov/sites/default/files/2014-05/documents/guide_qrg_ccr_2011.pdf.

⁷⁹ Pennsylvania Department of Environmental Protection, "Safe Drinking Water," Accessed on Feb 6, 2023, <http://www.drinkingwater.state.pa.us/>.

⁸⁰ Pennsylvania Department of Environmental Protection, "Source Water Assessment Summary Reports – Allegheny," Accessed on Feb. 6, 2023, <http://www.dep.greenport.state.pa.us/elibrary/GetFolder?FolderID=4492>.

PA Safe Drinking Water regulations direct public water suppliers to find and utilize the best sources available and to take measures necessary to protect those sources by defining wellhead protection and source water protection, setting permitting requirements for groundwater resources, and setting forth requirements for state approval of a local Source Water Protection Program. Unfortunately, because the SWP program is voluntary, far too few PA DEP-approved Sourcewater Protection Plans are in place.⁸¹

Notably, all Community Water Systems in Allegheny County eligible for the program developed PA DEP-approved Source Water Protection Plans by 2015, just over a decade after the original source water assessments were completed. PA DEP attempted to increase participation in their Source Water Protection Program by offering technical assistance grants to assist with the development of these plans.⁸² Even with established Source Water Protection Plans approved by the PA DEP, the spatial scale of system's regulatory authority is not sufficient to protect vast source areas, and therefore regulation ultimately depends on state level authorities.

Water Quality Regulations/Lead in Drinking Water Infrastructure

Currently, the US EPA regulates more than 90 drinking water contaminants. With the continued evolution of scientific consensus, federal regulations may not reflect the best currently available information. Perhaps the best example of this dynamic at the local level is in drinking water lead (Pb) content. Current medical advice dictates that no safe level of blood lead has been identified.⁸³ The US EPA estimates that up to 20% or more of lead exposures can result from consumption of drinking water with elevated lead content.⁸⁴ Locally, 80% of active Community Systems in Allegheny County have detectable levels of lead in their drinking water, according to their 2019 Annual Consumer Confidence Reports.⁸⁵ Therefore, there are many water systems where lead continues to contribute to potential exposure risk yet lead content is below the federally-mandated action level.

Drinking water lead content arises from the legacy of lead in water distribution systems: service lines, fittings, solders, and other plumbing materials. In an ideal world, all leaded materials would be removed from water distribution systems, but water quality management priorities are complex and depend on a wide range of considerations. There are best practices that can be followed to protect public health. An inventory of lead service lines allows clear evaluation of the scope of a line replacement program. If lead materials are common in a water system

⁸¹ Sourcewater Protection PA, "What is the Status of Your Water System's Source Water Protection Program?" Accessed on Feb 6, 2023, https://sourcewaterpa-archive.prwa.com/index.html%3Fpage_id=282.html.

⁸² Pennsylvania Department of Environmental Protection, "Pennsylvania Wellhead Protection Program," Accessed on Feb 6, 2023, https://www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/srceprot/source/Final_WHPP_AppB.htm.

⁸³ Centers for Disease Control and Prevention, "Health Effects of Lead Exposure," Accessed on Feb. 6, 2023, <https://www.cdc.gov/nceh/lead/prevention/health-effects.htm>.

⁸⁴ Environmental Protection Agency, "Basic Information about Lead in Drinking Water," Accessed on Feb. 6, 2023, <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

⁸⁵ Women for a Healthy Environment, *Something's in the Water: A System Analysis on Quality and Transparency in Allegheny County Community Water Systems*, (Pittsburgh, PA: Women for a Healthy Environment, 2021), https://womenforahealthyenvironment.org/wp-content/uploads/2021/06/2020159_WHE_WaterReport_FA3_SINGLE.pdf.

and resources for a replacement program are available, full service line replacements are a known safe alternative (i.e., replacement of lead materials both on the public and private sides). To be clear, partial line replacement is not acceptable. Partial replacements can increase lead exposures as lines are disturbed and fresh reactive surfaces are exposed to corrosion and other entrainment processes.⁸⁶

Emerging Water Quality Concerns

The US EPA develops Unregulated Contaminant Monitoring Regulations (UCMRs) every five years, allowing them to monitor a list of 30 contaminants of emerging concern from all public water systems serving at least 10,000 people, and a representative sample of smaller systems.⁸⁷ After collecting these data, at least five contaminants are considered for formal regulations that set new MCLs. Although the US EPA has developed MCLs for 94 contaminants, it has not set any new MCLs since the introduction of the UCMR in 1996.^{88,89}

The process to update regulations is slow in response to new science and there remains a pressing need for better regulation of toxicants. However, changing federal and state level toxics regulation far exceeds the power of individual local water systems. The processes for creating and enforcing regulations should be swifter and more responsive to scientific data about emergent substances with known and potential health impacts.

Evolution of PFAS Regulation

Per- and polyfluoroalkyl substances (PFAS) are a class of synthetic chemicals that have been manufactured and used since the 1940s. Their persistence and water-repelling properties led to their wide-ranging use in everyday products intended to be non-stick, waterproof, and/or stain resistant.⁹⁰ PFAS are persistent in the environment and human body and can accumulate over time in organisms causing adverse human health effects (i.e. weakened immune system, high cholesterol, and cancer).⁹¹

PFAS have been a part of the unregulated contaminant monitoring program under the Safe Drinking Water Act (SDWA) since 2009. On March 14, 2023, federal MCLs were proposed at 4 ppt for PFOA and PFOS.

At the state level, the PA DEP set MCLs for PFOA and PFOS at 14 ppt and 18 ppt respectively on January 14th, 2023.⁹³ Despite this progress, the MCL in Pennsylvania is dramatically higher than the proposed federal MCL. Currently, ten states including Pennsylvania have set MCLs for one or more PFAS.⁹⁴

⁸⁶ Mary Jean Brown and Stephen Margolis, *Lead in Drinking Water and Human Blood Lead Levels in the United States*, (Georgia: National Center for the Environment), 2012, <https://www.cdc.gov/mmwr/preview/mmwrhtml/su6104a1.htm>.

⁸⁷ Environmental Protection Agency, "Learn About the Unregulated Contaminant Monitoring Rule," Accessed on Feb. 6, 2023, <https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule>.

⁸⁸ Environmental Protection Agency, *Regulation Timeline: Contaminants Regulated under the Safe Drinking Water Act*, Environmental Protection Agency, 2015, https://www.epa.gov/sites/default/files/2015-10/documents/dw_regulation_timeline.pdf.

⁸⁹ Erik Olson, "The Broken Safe Drinking Water Act Won't Fix the PFAS Crisis," *Natural Resources Defense Council*, September 12, 2019, <https://www.nrdc.org/experts/erik-d-olson/broken-safe-drinking-water-act-wont-fix-pfas-crisis>.

⁹⁰ Women for a Healthy Environment, *Health Policy Brief: PFAS Per- and polyfluoroalkyl Substances*, Pittsburgh, PA: Women for a Healthy Environment, 2020, <https://womenforahealthyenvironment.org/wp-content/uploads/2021/08/PFAS-UPDATED-COPYRIGHT-FINAL.pdf>.

⁹¹ Environmental Protection Agency, *Drinking Water Contaminant Candidate List 3-Final*, (Washington, D.C.: Federal Registrar, 2009), <https://www.federalregister.gov/d/E9-24287/p-105>.

⁹² Environmental Protection Agency, *Drinking Water Contaminant Candidate List 3-Final*, (Washington, D.C.: Federal Registrar, 2009), <https://www.federalregister.gov/d/E9-24287/p-105>.

⁹³ Safer States, "PFAS," Accessed on Feb. 6, 2023, <https://www.saferstates.com/toxic-chemicals/pfas/>.

⁹⁴ Drexel PFAS Advisory Group, *Maximum Contaminant Level Goal Drinking Water Recommendations for Per- and Polyfluoroalkyl Substances (PFAS) in the Commonwealth of Pennsylvania*.

What we mean by water quality

Water equity is built upon the underlying expectation that there should be equitable availability of clean drinking water for all residents – including those who are poor, vulnerable, or reside within neighborhoods of color. Therefore, restoring justice requires determination of the root causes of inequity in regional water quality. A report by the Pittsburgh-based U.S. Water Alliance taskforce titled *An Equitable Water Future: Pittsburgh* identified transparency in water quality data sharing as a cornerstone for building and maintaining public trust. In particular, community water systems need to “produce, update and share timely, consistent, comparable and policy relevant water and water related data and information, and use it to guide, assess and improve their policy”.⁹⁵

Broadly, we assert the following vision for water quality in the Southwestern Pennsylvania region and beyond:

- Given the prevalence of lead exposures locally, invest capacity and resources into lead service line inventories, full lead service line replacements, and free residential testing upon request;
- Prioritize environmental justice communities when applying limited resources in multi-phase projects;
- Comply with state and federal drinking water quality requirements for monitoring, treatment/disinfection, public dissemination of results, and infrastructure maintenance;
- Routinely update Source Water Protection Plans, particularly among those systems that treat surface or groundwater directly and sell their water in bulk to other systems;
- Repair deficiencies in federal toxic rulemaking to avoid exposures to any contaminants with known or suspected impacts to human health (aka “emerging concern”); and
- Build the public’s confidence to use water from the tap.



⁹⁵ US Water Alliance, *An Equitable Water Future Pittsburgh*, Pittsburgh, PA: US Water Alliance, 2021, <https://www.uswateralliance.org/sites/uswateralliance.org/files/publications/Pittsburgh%20Equity%20Roadmap.pdf>.

Section 3: Process

Defining the Scope

During the summer of 2021, the Water Collaboratory engaged with WHE about potential next steps to advance access to clean and affordable drinking water in the region. This interaction led to a decision to expand on the *Something's in the Water* report and to create report cards for the 36 water systems in Allegheny County. While we recognize that many factors contribute to water inequities in governance, the team chose to focus on three specific elements referenced in the first report: transparency, affordability, and water quality.

Defining Grading Criteria

We researched aspirational practices based on equitable and community-oriented practices (Section 2). These aspirational practices were then used to create criteria (also called a rubric) that were used to evaluate and assign water system practice as “needs improvement”, “satisfactory”, “pro-active”, or “best practice”.

Data Gathering

On November 15, 2021, we sent an invitation letter to the 36 community water systems in Allegheny County, Pennsylvania to participate in our “2022 Water System Report Data Survey” (Appendix 2). The letter introduced the partnership and highlighted how this process builds on the findings of the WHE report and aims to create a level playing field for all water systems and customers.

Responsive Community Water Systems to Report Survey

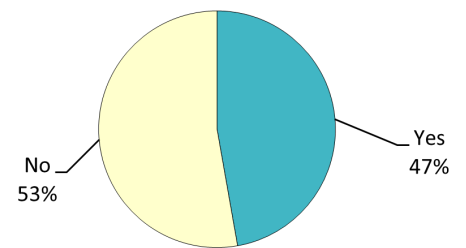


Figure 2: Summary of responsive systems in Allegheny County during the study (total number of systems in Allegheny County n= 36)

The letter listed and compared the data collected for the WHE report and the data we were intending to use for grading. Rather than utilize the legally-binding “Right to Know” process for requesting information from public entities, the team made a conscious choice to work in partnership with water systems. As a consequence of this decision, participation in the 2022 Water System Report Data Survey was voluntary.

Starting November 2021, our team encouraged survey participation via email, phone calls, and social media, as well as direct Zoom conversations with systems. On December 6, 2021, we reminded water systems via email of the approaching December 13, 2021, deadline. Due to a low response rate, a deadline extension was announced via email on January 24, 2022. This announcement included a recorded video (Appendix 2) by our team members inviting their participation and reiterating the contents of the written letter. We then conducted outreach by phone in anticipation of the revised deadline (February 7, 2022). In all, we received 17 responses to our voluntary survey. For all water systems, including non-responsive providers, we assembled existing data from multiple sources (Table 1).

Responsive Community Water Systems to Report Card Survey

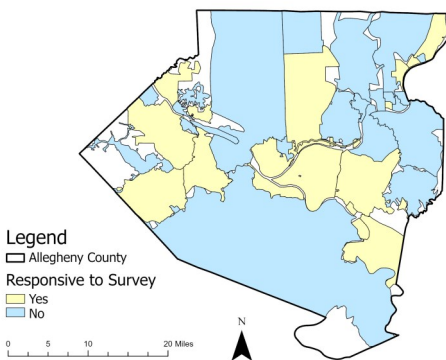


Figure 3: Map of community water system responses.

Table 1: Data Sources and Parameters Collected for Report Card Evaluation.

Source	Data Collected
2019 Right to Know Request data from the WHE report Something's in the Water	ownership type number of service connections water source(s) oversight type employee: consumer ratio billing process number of shut-offs board membership and meeting information availability of educational materials to ratepayers grievance procedures lead service line replacement practices lead line inventory progress risk communication practices availability of residential lead testing
Data from the PA DEP Drinking Water Reporting System (http://www.drinkingwater.state.pa.us/dwrs/HTM/Welcome.html)	number of service connections owner type population served water system service areas
2022 Water System Report Data Survey for this report	lead service line inventory progress total lead service line replacements (full and partial)* lead service line replacement grants received residential lead water testing total shut-offs affordability protections
Information publicly available on each water system's website and social media channels	board meeting information community advisory committees complaint forms affordability protections residential lead testing programs lead service line inventory Consumer Confidence Report (CCR) **

**This assessment excluded partials conducted by a homeowner (replacing the portion of lead service line between the building inlet and curb box), partials conducted by the water system in response to an emergency break in the line, partials conducted by the water system after attempting to gain the homeowner's consent to replace the full line and were denied access, and partials conducted by the water system prior to 2018 when the State of Pennsylvania denied water systems from replacing the private side.*

***Note the 2019 CCR data was used given the broad range in responses during the COVID-19 risk mitigation periods*

Evaluation and Grade Assignment

After data gathering (Table 1), an initial grade was assigned for each category for each water system in Allegheny County. All team members individually graded the same water system's practices. Team members discussed variations in each graded metric and collectively came to consensus on each grade for each rubric for each water provider. The rubric was refined following this process to clarify discrepancies that arose during individual grading and again in response to feedback from the water systems.

After this initial grading, we contacted each water system with their respective draft report card and rubric justification to solicit feedback, as initial grades were adjusted if systems shared additional information. Notably, four systems adjusted their practices or provided more information to immediately improve their grades.

Systems clarified grading inaccuracies and provided valuable feedback for the grading process. For example, we had to reevaluate our grading rubric for board meeting accessibility, moratorium on shut-offs, lead service line replacements, and drinking water quality regulations. If we received feedback but did not change the grade, detailed explanations of why the grade was assigned were included. See final rubrics in Figure 4a-4d.

For the systems that did not respond to the survey, where possible, we utilized information online to assign grades. The distribution of draft report cards in June of 2022 prompted two additional water systems to respond to our survey bringing the total number of responsive systems to 17.

Transparency Grading Rubric

Figure 4a: Transparency Grading Rubric

	Needs Improvement	Satisfactory	Pro-Active	Best Practice
<p>Board of Directors (BOD) Meeting Accessibility</p> <p>Note: The Board of Directors focuses on governance and fiduciary responsibilities. Community Advisory Committees (CAC) are focused on advice and insight, including from the lived shared experience of community members</p>	<p>No public board meetings</p> <p>No in-person or virtual mechanism in place for public participation in board of directors meetings (public comment, etc.)</p> <p>OR</p> <p>Insufficient information on one of the categories below</p> <ul style="list-style-type: none"> Type(s) of board meeting participation Meeting process description on the website Registration requirements for speakers Public comment placement on the meeting agenda 	<p>Practices 4 of the following:</p> <ul style="list-style-type: none"> In-person board meeting Virtual board meeting Sufficient information on website Public comment at beginning of meeting Public comment for registered speakers Public comment for unregistered speakers 	<p>Practices 5 of the following:</p> <ul style="list-style-type: none"> In-person board meeting Virtual board meeting Sufficient information on website Public comment at beginning of meeting Public comment for registered speakers Public comment for unregistered speakers 	<p>Practices all of the following:</p> <ul style="list-style-type: none"> In-person board meeting Virtual board meeting Sufficient information on website Public comment at beginning of meeting Public comment for registered speakers Public comment for unregistered speakers
<p>Community Advisory Mechanisms</p>	<p>No community advisory committees (CAC) separate from the Board of Directors</p>	<p>Community advisory committee(s) exist</p> <p>Membership consists of multiple stakeholders in the community</p>	<p>Community advisory committee(s) exist</p> <p>Membership consists of multiple stakeholders in the community including content experts and context experts (residents)</p>	<p>Community advisory committee(s) exist</p> <p>Membership consists of multiple stakeholders in the community including content experts and context experts (residents)</p> <p>The public is able to engage with and participate in committee decisions in two-way dialogues</p>
<p>Ease of Reporting Complaints</p>	<p>None of these complaint submission methods exist: by phone, online form, or in-person form</p> <p>OR</p> <p>Written complaint form is not on the front page of the website</p>	<p>One formal method to submit a complaint (e.g. phone, online form, or in-person form)</p>	<p>Two formal methods to submit a complaint (e.g. phone, online form, or in-person form)</p>	<p>Formal complaints can be submitted by phone, online form, and in-person form</p>



Affordability Grading Rubric

Figure 4b: Affordability Grading Rubric

	Needs Improvement	Satisfactory	Pro-Active	Best Practice
Permanent Water Affordability Protections	<p>None of these permanent affordability protection programs are in place: Tiered income assistance, permanent moratorium on shutoffs, debt forgiveness program, waive late payment fees, payment plans, or other assistance programs</p> <p>No way to enroll</p>	<p>One to two permanent affordability protections in place</p> <p>One way to enroll</p> <p>OR</p> <p>Information on protections and enrollment are available upon request but not available on website</p>	<p>Two or more permanent affordability protections in place</p> <p>Two ways to enroll</p> <p>Information on website</p> <p>Actively working with local organizations and community representatives; community-based outreach for enrollment in programs</p>	<p>Multiple permanent affordability protections including all of the following: Tiered income assistance, permanent moratorium on shut offs, payment plans, debt forgiveness program, and waive late payment fees</p> <p>Three or more ways to enroll & multiple forms of community driven education for enrollment</p> <p>Information on website</p> <p>Community engagement around affordability protections that are relevant to areas of greatest need</p>



Water Authority
Water Quality Grading Rubric

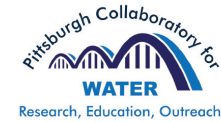


Figure 4c: Water Quality Grading Rubric

	Needs Improvement	Satisfactory	Pro-Active	Best Practice
Lead Service Line (LSL) Replacements	No full LSL replacements in 2020 OR Any partial LSL replacements in 2020 that were NOT a result of an emergency or lack of homeowner consent	Full LSL replacements in 2020 Zero partial LSL replacements in 2020 that were NOT a result of an emergency or lack of homeowner consent	Full LSL replacements in 2020 Zero partial LSL replacements in 2020 that were NOT a result of an emergency or lack of homeowner consent And at least one of the following: Public goal date by which all LSLs will be replaced Environmental justice communities are prioritized for full LSL replacements Former partial LSL replacements are corrected	All LSL replacements in 2020 were full LSL replacements Public goal date by which LSLs will be replaced Environmental justice communities are prioritized for full LSL replacements Former partial LSL replacements are corrected
Lead Service Line Inventory	No lead service line inventory exists	Lead service line inventory in progress	Complete lead service line inventory exists	Complete lead service line inventory exists both internally and online for public
Access to Residential Lead Testing	No residential lead testing available upon request	Residential lead testing available upon request, for a cost	Free residential lead testing upon request	Free residential lead testing upon request Results available publicly online Free interventions (e.g. water filter, lead service line replacement, etc.) provided if levels exceed EPA action level of 15 ppb

Note: A lead service line is one that is made of lead and connects the water main to the building inlet, on either the public or private side. This assessment excluded partial lead line replacements conducted by a homeowner on the private side, or conducted by the water system in response to an emergency break in the line or after being denied access to the private side by the homeowner. Lead service lines are evaluated in a holistic manner because many systems do not know whether lines are present, which is why inventory and testing are important for context.



Water Quality Grading Rubric (continued)

Figure 4d: Water Quality Grading Rubric continued

	Needs Improvement	Satisfactory	Pro-Active	Best Practice
Compliance with Drinking Water Quality Regulations	<p>Failed to submit an on-time consumer confidence report (CCR) in 2019. Learn more about CCR in our glossary.</p> <p>OR</p> <p>Any contamination-related drinking water violations in 2019</p> <p>OR</p> <p>Two or more administrative drinking water violations in 2019</p>	<p>Practices 2 or more of the following:</p> <p>Submitted on-time consumer confidence reports in 2019</p> <p>No contamination-related drinking water violations in 2019</p> <p>No administrative drinking water violations in 2019</p>	<p>Have DEP approved Source Water Protection Plan designated for their system or purchases from another water system that does and notes this in their CCR</p> <p>AND</p> <p>Practices 2 or more of the following:</p> <p>Submitted on-time consumer confidence reports in 2019</p> <p>No contamination-related drinking water violations in 2019</p> <p>No administrative drinking water violations in 2019</p>	<p>Have DEP approved Source Water Protection Plan designated for their system or purchases from another water system that does and notes this in their CCR</p> <p>AND</p> <p>Practices all of the following:</p> <p>Submitted on-time consumer confidence reports in 2019</p> <p>No contamination-related drinking water violations in 2019</p> <p>No administrative drinking water violations in 2019</p>



Report Limitations

Our team repeatedly re-engaged when survey response rates were low, solicited feedback to address inaccuracies, adjusted the rubric to better reflect the challenges water systems face, and communicated with water systems throughout the process. Despite these efforts, less than half of water systems responded to the survey. As a consequence, not all systems were assigned grades for all rubric categories. In particular, for non-responsive systems, no grades were assigned for affordability protections or lead criteria if there was no information present on the website.

Another limitation of this process is that our team took responses from water systems at face value. If the system said they were going to change practices, we graded them as such. For example, in some cases systems responded to the 2019 WHE survey by reporting “non-applicable” to lead grading criteria, and their grades reflect this response.

Section 4: Findings

Water System Landscape in Allegheny County

Allegheny County is serviced by 36 community water systems. Data presented include only 17 systems (47%) that responded to our survey. Overall, there is significant variability in the size of systems, with the smallest system servicing 617 connections and the largest servicing 210,964 connections. Additionally, the number of employees relative to consumers varies by a factor of ten and that reflects vast differences in resource availability for water systems. The service populations between systems also vary widely, with some systems servicing areas with no EJ populations and others servicing entirely EJ populations (Figure 5).

Table 2: Community water system characteristics in Allegheny County including ratio of consumers to one staff member, total service connections, environmental justice populations served, and the total population served.

Descriptive Statistics of Water Systems in Allegheny County			
	Range	Average	Median
Consumers per one staff	147-1,364	439	400
Total Connections	617-210,964	14,485	2,376
Environmental Justice Population Served	0%-100%	17%	0%
Total Population Served	1,459-686,000	55,469	6,800



Percentage of Environmental Justice Populations with Water Service Areas in Allegheny County

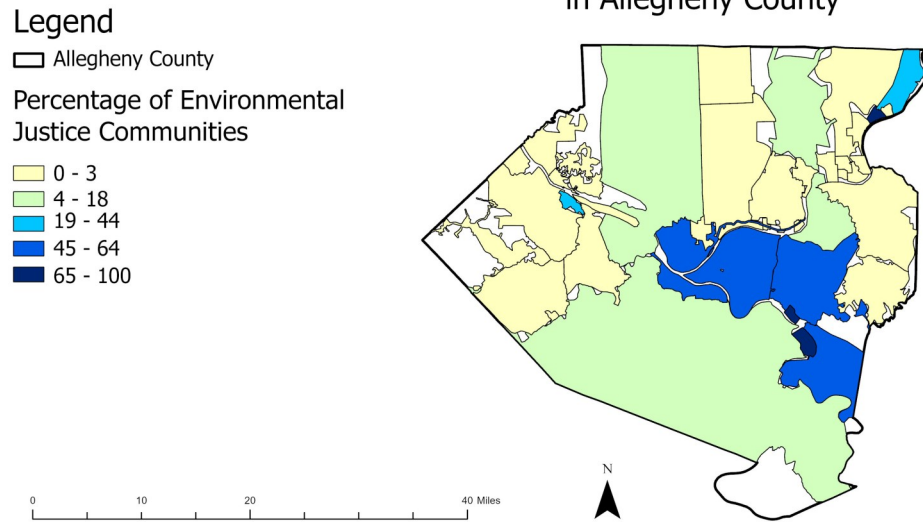


Figure 5: Map of environmental justice populations served by community water systems in Allegheny County.

System ownership status varies among water systems that service Allegheny County. Overall, 23 systems are water authorities, 12 are municipality-owned systems, and one is an investor-owned system (Figure 6).

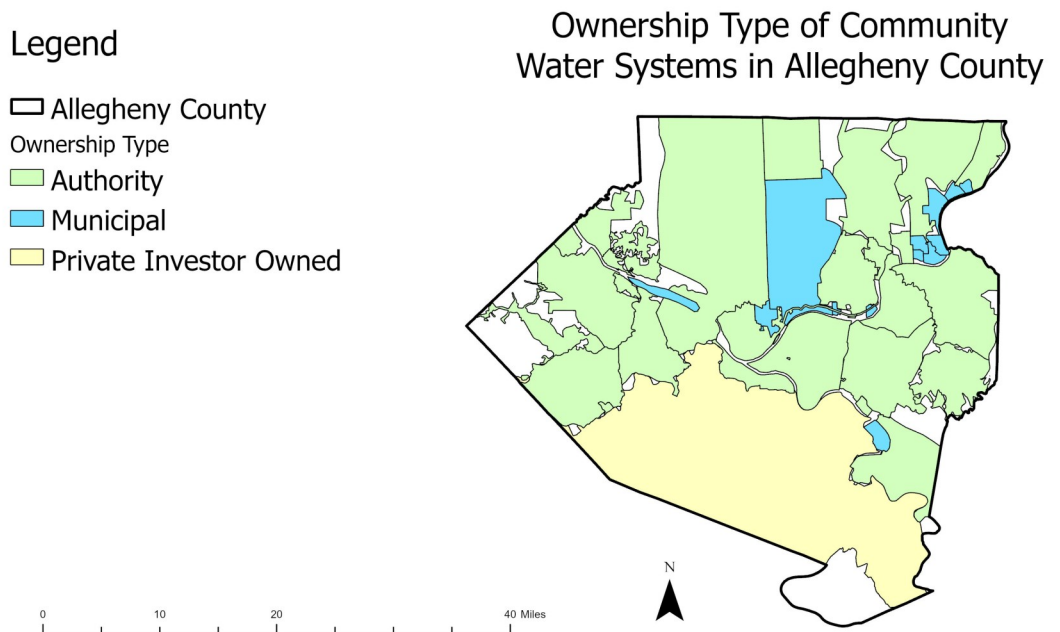


Figure 6: Community Water System Ownership Types in Allegheny County

Overall Report Card Results

In terms of relative performance, compliance with drinking water quality (DWQ) regulation had the highest average grades, but also had the greatest variability, indicating areas where additional support is needed. No system scored “best practice” in the transparency or affordability categories. Grades for community advisory mechanisms were the lowest on average across all grading criteria. Affordability protections grades were the most uniform, although this result is affected by less available data on the affordability grading criterion.

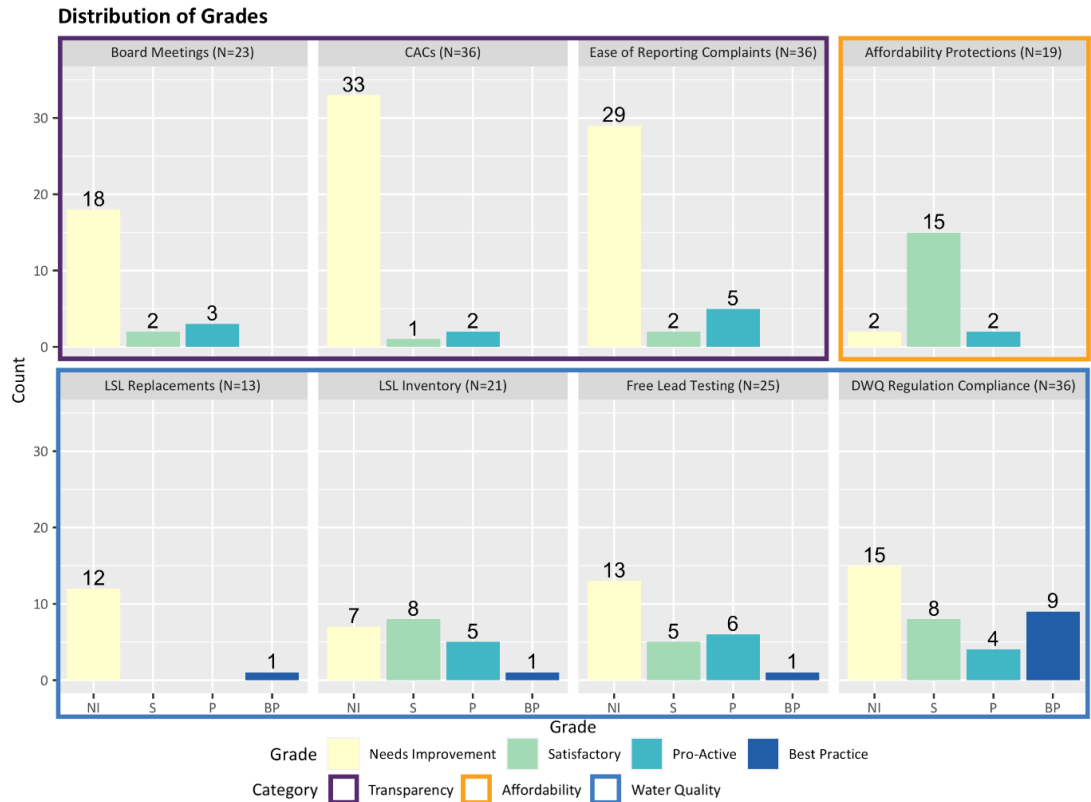


Figure 7: Distributions of grades for all criteria including Board of Director Meeting Accessibility, Community Advisory Committees (CACs), Ease of Reporting Complaints, Affordability Protections, Lead Service Line (LSL) Replacements, LLS Inventory, Free Residential Lead Testing, and Drinking Water Quality (DWQ) Compliance.

Systems with fewer consumers per staff tended to have higher grades (Figure 7), particularly for community advisory committees, ease of reporting complaints, affordability protections, and DWQ regulation compliance. This indicates that the size of the system (i.e., small staff size) can make implementation of good practices challenging.

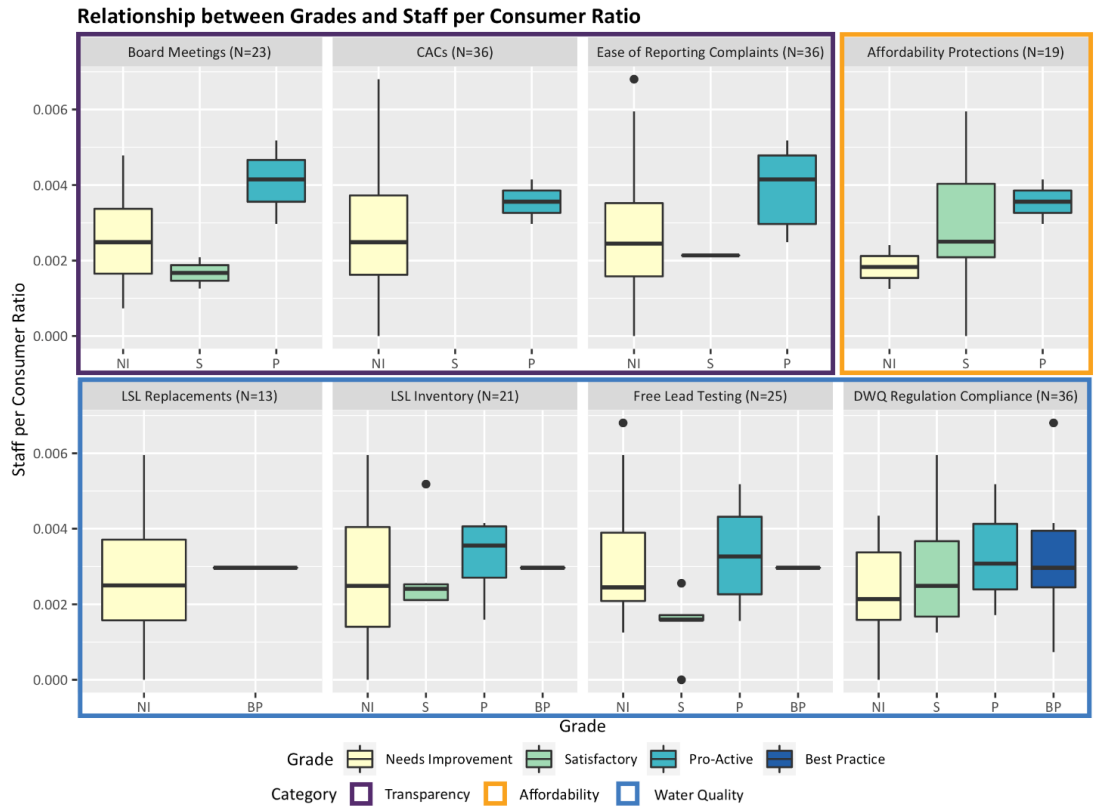


Figure 8: Box and whisker plots of the relationship between the staff to consumer ratio and the grades in each category. A higher staff to consumer ratio indicates that there are more staff members per consumer within the water system.

Transparency

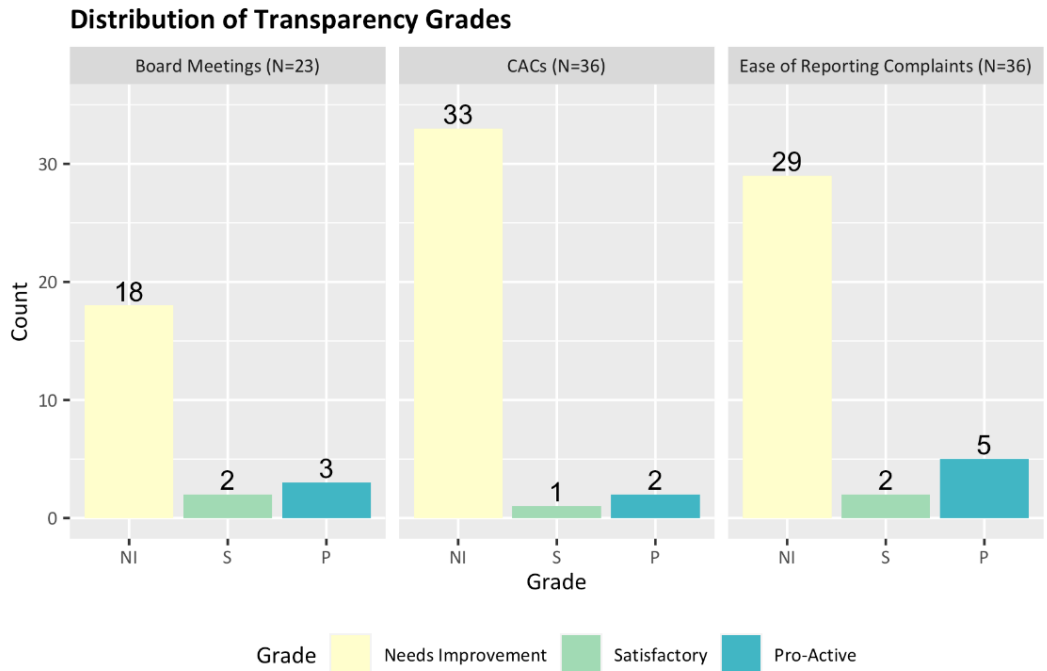


Figure 9: Distributions of transparency grades.

Board of Directors (BOD) Meeting Accessibility

Only five public water authorities had sufficient information on their website for the public to participate in board of director meetings. However, many water systems would have higher transparency grades by simply noting the details about board meetings on their website such as the date, time, location, and meeting minutes.

Water systems that received a “not applicable” on the board of director grading criterion are either municipally or privately owned and therefore do not have a dedicated board of directors that governs water distribution. It is important to recognize that municipalities manage the water system as a municipal department, and board of director responsibilities are covered by broader municipal governance structures. On the other hand, many investor-owned systems do not have public boards, which can prevent full transparency for and accessibility to ratepayers and communities regarding their drinking water. In these cases, communities can lack the opportunity to communicate with the water system beyond what is shared in a legally required Consumer Confidence Report (CCR).

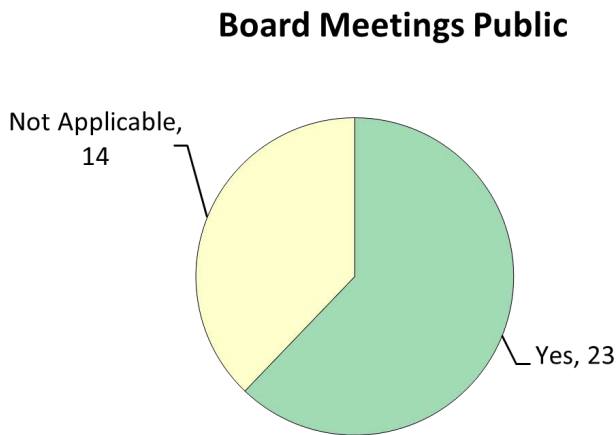


Figure 10: Water systems with public board meetings (n=36)

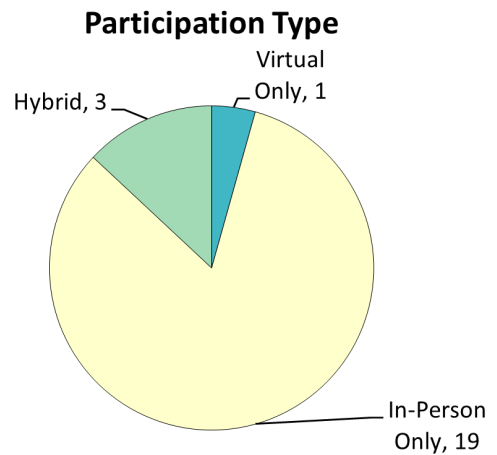


Figure 11: Meeting participation type at water systems with a public board meeting. Note that some municipal systems are governed by the municipal board and are not included (n=23)

Community Advisory Mechanisms

Only three systems have Community Advisory Committees (CACs) - Moon Township, Pittsburgh Water and Sewer Authority, and Municipal Authority of Westmoreland County. While CACs are only one mechanism to improve transparency, they provide a formalized structure that allows community engagement in water governance and can also create more participation mechanisms. An open board meeting is a first step, but systems that maintain a CAC recognize multiple values and benefits of having community representatives: 1) they ask questions about operations, particularly capital improvement projects (such as lead service line replacements), 2) they help prioritize projects, and 3) they critique communication materials and methods of distribution.

Ease of Reporting Complaints

Another mechanism for communication between ratepayers and water systems is a complaint form. Of the 36 water systems in this study, only seven had a formal complaint form on the front page of their websites or in an otherwise easily accessible location. These forms can provide a simple mechanism, yet important and easy, mechanism for ratepayers to communicate with water systems.

Systems with Website Complaint Form on Front Page

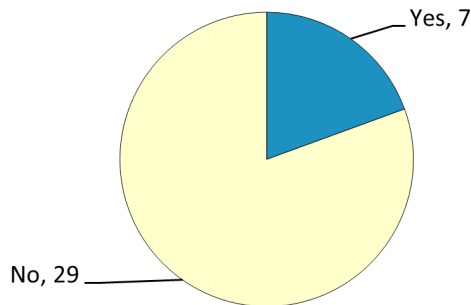


Figure 12: Systems with complaint forms on the front page of their website or in an otherwise easily accessible location (n=36)

Affordability

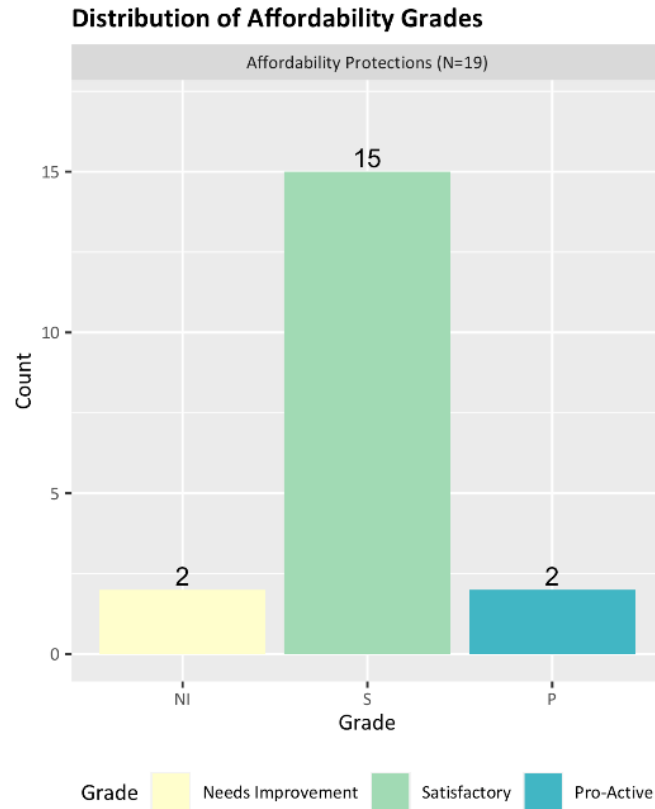


Figure 13: Distribution of affordability grades among the 19 systems with available data on affordability protections.

Affordability of water is a rising concern in the United States, and as stated in Section 2, water affordability is central to achieving water equity. Many of the systems that responded to our survey indicated one or more affordability protection upon request, however, there often was nothing on their websites. Considering this, there may be more affordability protections available, but it may be difficult for consumers to know their options.

Permanent Water Affordability Protections

Two water systems scored in the “pro-active” category, which shows encouraging leadership in regional water affordability practices. However, 15 water systems had only a “satisfactory” grade on affordability and two water systems received “needs improvement”.

Our findings indicate that of all the affordability programs in place in the region, payment plans are the most common (17 water systems); followed by grace periods for late payments (9) and waivers of late payment fees (7). Most water systems could add additional enrollment options and/or affordability protections to provide more for their customers, which would raise their score.

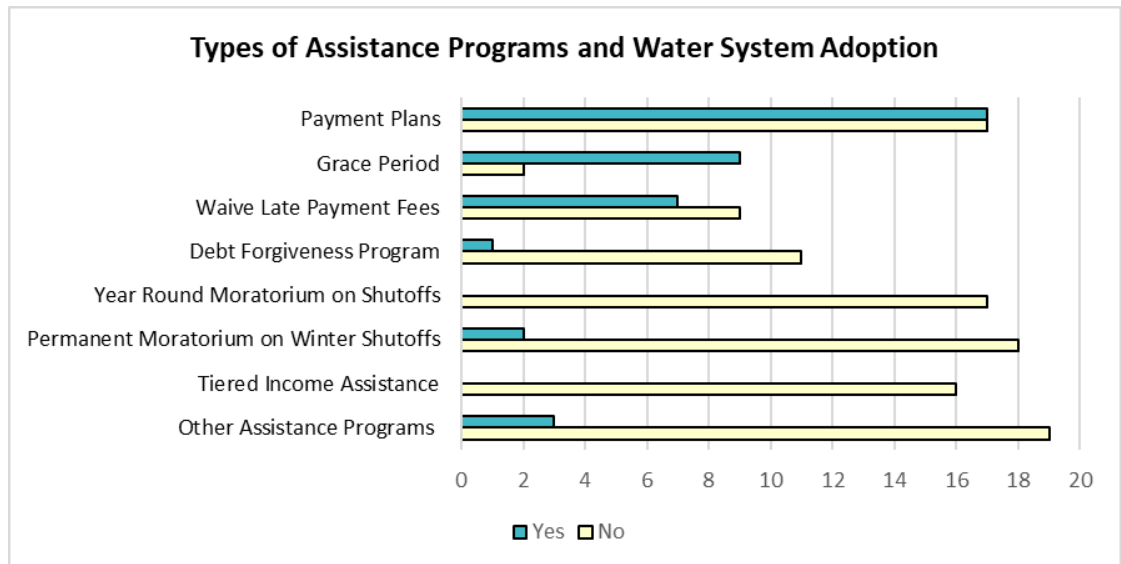


Figure 14: All assistance programs provided by systems who responded to our survey.

Although water systems generally have some affordability programs in place, it is important to note that these practices (payment plans and grace periods) do not reduce the burden that low-income households face in being able to afford their water. The exception is Pittsburgh Water and Sewer Authority which employs an accumulated debt forgiveness program that lessens the burden on low-income and environmental justice households. Other systems, especially those with a high percentage of ratepayers in environmental justice communities, should consider implementing such a measure.

Table 3: Table showing systems with specific number of permanent water affordability protections in place for consumers. This data was obtained from survey completion or found on the system's website. Note: If system is not on this list, information was not available.

System	# of Protections
Pittsburgh Water and Sewer Authority	8
Braddock Borough Water Authority	3
Hampton Shaler Water Authority	3
Harrison Twp Water Authority	3
Moon Twp Municipal Authority	3
Tarentum Borough Water Dept	3
Aleppo Township Authority	2
Aspinwall Borough Water Department	2
Blawnox Borough Water Department	2
Edgeworth Borough Municipal Authority	2
Municipal Authority of Westmoreland County-McKeesport	2
Cheswick Borough Water Department	1
Duquesne Water Department	1
East Deer Township Water Department	1
Pennsylvania American Water Company-Pittsburgh	1
Robinson Township Municipal Authority	1
West View Water Authority	1
Western Allegheny County Municipal Authority	0
Wilkinsburg-Penn Joint Water Authority	0

Shut-Off Rates

Some water systems in Allegheny County have unacceptably high shut-off rates. For example, the highest shut-off rate constituted up to 26% of total connections for one system (Municipal Authority of Westmoreland County). However, there is insufficient data to differentiate between shut-offs of residential water access and shut-offs of commercial water access. Regardless, even if only a moderate number of these are residential shut-offs, this is an unacceptably high rate. This rate and the skewed distribution of rates (i.e., systems generally had minimal shut-offs or many shut-offs with few in between) warrant additional scrutiny of these practices across the County.

Moratorium on Shut-Offs

In an ideal scenario, permanent shut-offs would be eliminated. Water shut-offs are in direct conflict with the human right to water framework. Lack of water access because of an inability to pay has devastating public health and economic consequences for households. In our findings, only three water systems have a permanent winter moratorium on shut-offs in place and zero systems have a year-round moratorium on shut-offs.

Water Systems with Moratorium on Shut-Offs

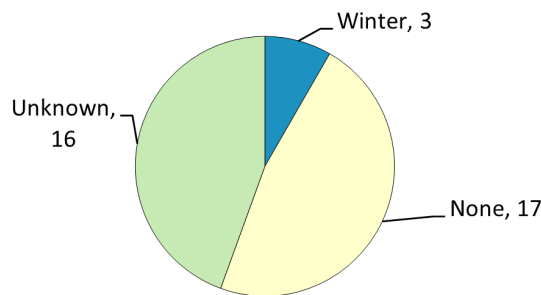


Figure 15: Summary of systems who have a permanent winter moratorium on shut-offs in place. Unknown responses are from systems who did not respond to the survey or did not have information on their website.

Of the 19 graded systems, only four (Pittsburgh Water and Sewer Authority, Moon Township, Pennsylvania American Water, and Westview Water Authority) stated they had affordability protections on their websites. In some cases, it was easily visible. In other cases, the information was not easily accessible. 15 of the 19 graded systems had no information on their websites but offered protections for consumers if asked.

Water Quality and Legacy Infrastructure

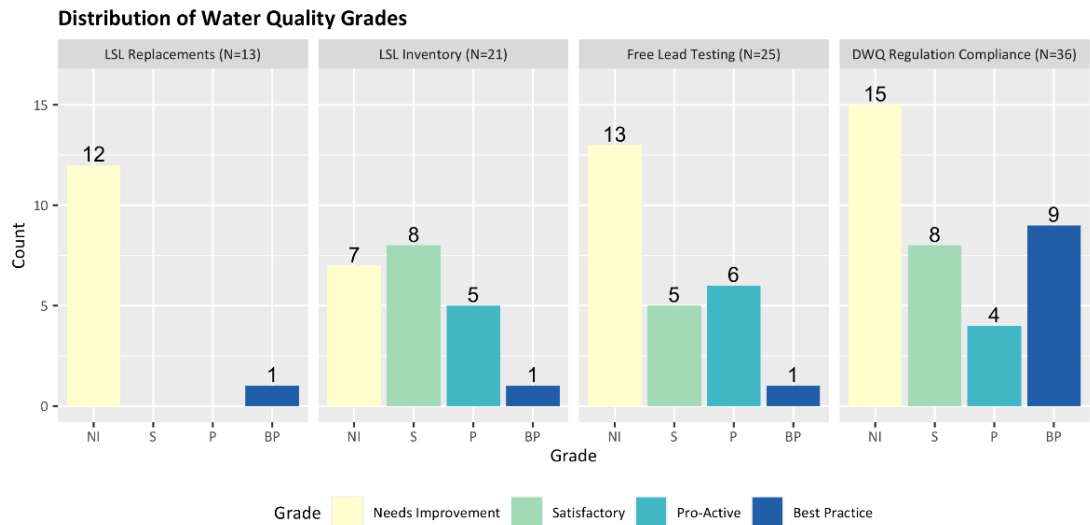


Figure 16: Distribution of water quality grades.

Legacy Lead Line Management

One of the most serious threats to drinking water quality in Allegheny County is the interaction of treated drinking water with legacy distribution infrastructure. Much of the water distribution infrastructure in Allegheny County was installed prior to the prohibition of lead in distribution systems in 1986. Although, the challenges City of Pittsburgh residents face with regard to drinking water have been previously documented, survey results provide a clearer picture of challenges across Allegheny County and are reported below.^{96,97}

Lead Service Line (LSL) Replacements

Water systems have barely begun the long process of replacing lead service lines. Only one water system (Pittsburgh Water and Sewer Authority) was assigned a “satisfactory” or higher grade (Figure 16). However, low scores may not capture current conditions for a number of reasons. In particular, if a water system completed a partial lead line replacement during this period, given the clear public health risk from partial line replacements, they were assigned a “needs improvement” score for the lead line replacement grade. We expect full lead line replacements will become more common as funding becomes available, and this change should rapidly improve scores.

⁹⁶ Oliver Morrison, “Pittsburgh Water Crisis and Turnaround,” *PublicSource*, October 18, 2021, <https://www.publicsource.org/pittsburgh-water-crisis-and-turnaround/>.

⁹⁷ Jessica Glenza, “Pittsburgh officials may have ‘deflected’ attention from lead-contaminated water,” *The Guardian*, July 25, 2017, <https://www.theguardian.com/us-news/2017/jul/25/pittsburgh-lead-drinking-water-flint-epa>.

Lead Service Line Inventories

Before lead service lines can be removed, lead line inventories need to be completed. While these inventories will soon become a requirement with the revised Lead and Copper Rule, County water systems have made progress toward completing these inventories with 67% of responsive systems having completed or initiated inventories.⁹⁸

Table 4: System status in creation of a lead service line inventory. Systems not included in this table did not respond to our survey and lead service line inventory status is unknown.

System	Lead Service Line Inventory Status
Aleppo Township Authority	Complete Internal Inventory
Braddock Borough Water Authority	Complete Internal Inventory
Hampton Shaler Water Authority	Complete Internal Inventory
Moon Township Municipal Authority	Complete Internal Inventory
Municipal Authority of Westmoreland County-McKeesport	Complete Internal Inventory
Pittsburgh Water and Sewer Authority	Complete Inventory External
Aspinwall Borough Water Department	In Progress
Blawnox Borough Water Department	In Progress
Edgeworth Borough Municipal Authority	In Progress
Fox Chapel Authority	In Progress
Pennsylvania American Water Company - Pittsburgh	In Progress
West View Water Authority	In Progress
Wilkinsburg-Penn Joint Water Authority	In Progress
Robinson Township Municipal Authority	In Progress
Cheswick Borough Water Department	None
Coraopolis Water & Sewer Authority	None
Duquesne Water Department	None
East Deer Township Water Department	None
Monroeville Municipal Authority	None
Tarentum Borough Water Department	None
Western Allegheny County Municipal Authority	None

⁹⁸ Environmental Protection Agency, "Revised Lead and Copper Rule," Accessed on Feb 6, 2023, <https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule>.

Access to Residential Lead Testing

Only 34% of County water systems offer lead drinking water tests for their customers. This is a relatively low proportion given the slow progress on lead service line replacement and widespread incidence of lead materials in county drinking water distribution systems. Six systems provide this important service upon request for residents including Aleppo Township Authority, Aspinwall Borough Water Department, Duquesne Water Department, Pittsburgh Water and Sewer Authority, Reserve Township Water Department, and Municipal Authority of Westmoreland County-McKeesport.

Compliance with Drinking Water Quality Regulations

The majority of water systems (21) scored “satisfactory” or above for compliance with drinking water quality regulations. “needs improvement” grades are primarily driven by violations of PA DEP drinking water regulations. The vast majority of violations are “administrative violations” including things like failing to meet notification requirements or failing to report water testing results. However, there was one water system (City of Duquesne) that did not send out a CCR to customers. In addition, the City of Duquesne had one contamination violation in 2019.

Source Water Protection

There are clear bright spots in the management of water quality amongst drinking water systems in Allegheny County. In particular, all systems with surface water sources have an active source water protection plan, and all systems utilizing groundwater sources have a well head protection program.^{99,100} Participation in these preventive programs is key to sustaining drinking source water quality. In conversations with systems and regulators, it is clear that this status results from the strong efforts of the regional Pennsylvania Department of Environmental Protection.

Despite 100% of systems having a source water protection plan (SWPP), not all systems communicate their source water protection plan to the public. Only 19 systems include a mention of their SWPP in their Consumer Confidence Report. Of those 19 systems, 16 have their own plan, and three purchase their water from another source.

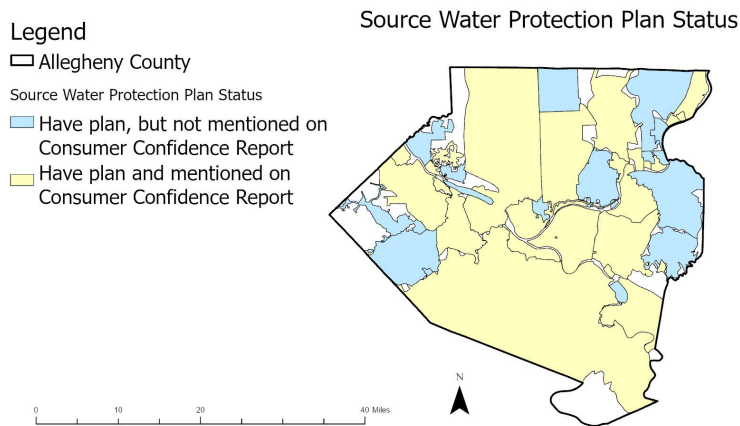


Figure 17: Systems who have a PA DEP approved voluntary source water protection plan and mention it within their 2019 consumer confidence report.

⁹⁹ Sourcewater Protection PA, “What is the Status of Your Water System’s Source Water Protection Program?”.

¹⁰⁰ Pennsylvania Department of Environmental Protection, “Pennsylvania Wellhead Protection Program.”

Section 5: Conclusions and Recommendations

A key finding of our report card analysis is that no system scored “best practice” in the metrics of Transparency or Affordability...

This assessment of Allegheny County water systems highlights fundamental challenges to effective management of drinking water. Fractured governance is long recognized as a fundamental barrier to regional progress.¹⁰¹ This emerges in these report cards in the patterns of small systems and their staffing. Small staff sizes relative to their ratepayer base limit water system’s ability to implement processes that make their work transparent or administer affordability protections. While systems with thousands of connections can spread the cost of effective data information systems across those many customers, systems serving hundreds of connections struggle to maintain effective billing systems, etc. This struggle is exacerbated by increasingly complicated and expensive mechanisms necessary to secure electronic billing platforms. On the other hand, when systems serve larger and wealthier communities, the costs of affordability protection programs are lower on a per-capita basis and can result in less expensive water rates. There are initiatives within the county that are seeking fundamental solutions to challenges created by fractured governance, but they have yet to yield significant results. One suggested route, privatization, is not a workable solution. It may solve short term economic problems, but it leaves water system ratepayers with minimal control over their drinking water future.

A key finding of our report card analysis is that no system scored “best practice” in the metrics of Transparency or Affordability (including board of director meeting accessibility, community advisory mechanisms, ease of reporting complaints, and affordability protections). In contrast, the scores for water quality (including lead service line replacements, lead service line inventory, residential lead testing, and compliance with drinking water regulations) were generally higher. In the case of water quality metrics, the federal and state guidance is copious and clear, and this guidance may contribute to better scores. These results highlight the need for agency guidance or regulatory frameworks to implement best practices in transparency and affordability.

¹⁰¹ National Research Council, “Regional Cooperation for Water Quality Improvement in Southwestern Pennsylvania,” *The National Academies Press*: 2005, <https://doi.org/10.17226/11196>.

Transparency

Transparent water systems closely connect water ratepayer needs and concerns to water managers, accelerating the implementation of effective solutions for water system issues. The aggregated grades summarized in the result section suggest:

- The vast majority of water systems (78%) should improve their public-facing information on board meeting logistics and procedures (online information sharing, an open board meeting, etc.). Regrettably, some water systems have virtually no information on these matters available in easily accessible locations.
- Most water systems (92%) should add community advisory councils, a helpful advisory structure to enhance transparency.
- Mechanisms to collect ratepayer complaints should be improved in most water systems. In particular, development of accessible complaint forms available to ratepayers both in hard copy and via the website is recommended.

Transparency is a commitment to the community. It builds trust and provides a pathway for accountability, engagement, and feedback that increases ratepayer confidence which affirms water system trustworthiness. The UN's Sustainable Development Goals center transparency. "Supporting and strengthening the participation of local communities in improving water and sanitation management" is fundamental to moving beyond evaluation to action.¹⁰² Water systems should welcome feedback from ratepayers, focus on providing a quick resolution of issues, and resolve concerns through an equity lens.

Affordability

Clean, affordable drinking water is a human right. The "shut-off" of water supply to residential customers slow or behind on paying their water bills fundamentally precludes that right. In lieu of shut-offs, systems should implement affordability protections that help ratepayers going through financial hardships. Best practice dictates the use of other collection approaches and the cessation of water shut-offs.

Report results suggest:

- Permanent, year-round moratoria should be widely adopted to make water affordable and accessible to all in our region. Most responsive water systems have some type of moratorium on water shut-offs, particularly during the COVID-19 pandemic. However, it is not clear how persistent these moratoria will be in the future as COVID-19 risk mitigation practices ease.
- Instead of shut-offs, a wide range of readily accessible affordability protections (such as grace periods or tiered income assistance programs) should be implemented to ensure access to affordable drinking water. These programs are in place in several systems in the region and provide an important example that should be adopted by other water systems that lack affordability protections.
- Affordability protections should be easily accessible through system websites and other communications (e.g., email notification and paper billing).
- Future efforts should include increasing and easing access to these important affordability programs through multiple enrollment options and community driven engagement.

¹⁰² United Nations, "6: Ensure availability and sustainable management of water and sanitation for all," Accessed on Feb 6, 2023, <https://sdgs.un.org/goals/goal6>.

Water Quality

Drinking water quality can be a challenge to achieve, particularly in a region with legacy water infrastructure. Because ratepayers cannot necessarily see or taste contamination, without clear regulation and enforcement, trust in drinking water quality erodes. Our findings lead to the following recommendations:

- In non-emergency situations, lead water lines should never be partially replaced.
- Water systems that have not initiated lead service line inventories should initiate surveys immediately. This is particularly important given the opportunities to take advantage of new and unprecedented infrastructure funding that can be used to reduce lead exposures in drinking water systems.
- Lead service line replacement programs should be put in place, carefully monitored, and data made available in an accessible, transparent framework.
- Until lead service lines are replaced, it is imperative that customers have access to no-cost residential lead testing and preventative interventions upon request.
- Regional efforts to protect drinking source waters are exemplary. All systems should continue to participate in source water protection programs (including well-head protection).
- All systems should comply with drinking water quality regulations. Although most water systems are generally compliant with Safe Drinking Water Act standards enforced by PA DEP, there are a handful of systems that have multiple violations of administrative drinking water regulations.



Future Action and Emerging Risks

Funding available for water systems to implement best practices in all areas is limited. This report highlights the need to allocate federal and state funding to implement best practices in transparency, affordability, and water quality. There are unprecedented opportunities to invest in drinking water infrastructure that will arise over the coming years. Continued and improved transparency is vital to the effective utilization of incoming federal funding. At the end of this rebuilding era, the region could emerge with transparent and equitable water governance systems that are free of lead service lines.

On the other hand, it is important to recall that structural governance issues will continue to challenge the region. As a consequence, efforts to consolidate governance and create workable solutions for small systems remain vital to regional success. Many of the small water systems in Allegheny County will be challenged to meet complex project application requirements and timelines for obtaining state and federal assistance. For example, the state program that provides funding, PENNVEST, requires significant project development work by systems seeking funds (including cost benefit analyses, pre-application meetings and approvals, funds that are primarily distributed on a reimbursement basis).¹⁰³ These requirements will only reinforce and worsen existing disparities in drinking water access and quality.

Water privatization threatens transparent and democratic water governance. When financially distressed communities face the difficulty of improving standards of service provision without access to adequate funding, there is always the risk of privatization of water systems. During efforts to fix aging infrastructure, it remains essential that drinking water governance is transparent. Privately owned systems are not required to make data public, hold public meetings, nor respond to right to know requests.¹⁰⁴ Moreover, water affordability quickly becomes harder to guarantee, as systems transfer their decision-making from ratepayers to investors. Means to support small systems challenged by increasingly complicated regulatory structures are imperative for preventing additional privatization in the County and region. Continued vigilance against privatization across systems is vital to a more equitable water future in Allegheny County.

Further, the region has inherited a legacy of inequitable drinking water infrastructure. As some water systems continue progress toward advancing ratepayer water quality, this should not detract from correcting inequities and repairing injustices that existed in the past and remain today. While this report and the associated evaluation process did not collect the data required to assess these patterns of injustice, it is imperative that future efforts define metrics to measure and solutions to repair patterns of injustice.

In addition to the current challenges identified in this report, new and emerging challenges will certainly follow. As the climate of Allegheny County continues to change, the manifestation of these changes is hard to predict with certainty. Changes in precipitation patterns already confront the region with sewer overflows and flooding. Similar impacts to water resources are likely. On the other end of the spectrum, if our region becomes a refuge for U.S. residents seeking relief from climate change, the challenges faced by water systems in Allegheny County will be compounded by the need to serve substantial numbers of displaced people. It is essential to integrate these possibilities into our visioning and planning for the water future of Allegheny County, despite governance challenges.

¹⁰³ PENNVEST, Understanding the PENNVEST Funding Process, https://www.pennvest.pa.gov/migration/Documents/understanding_the_pennvest_funding_process.pdf.

¹⁰⁴ Marcela González Rivas and Caitlin Schroering, "Pittsburgh's translocal social movement: A case of the new public water," *Utilities Policy* Volume 71 (2021): <https://doi.org/10.1016/j.jup.2021.101230>

An equitable clean water future can only become a reality through creative thinking and solutions that address the larger systemic challenges.

Beyond climate change, there are emerging contaminants in the region. PFAS continue to be discovered in new places across the region. Continued unconventional gas extraction will likely accelerate to meet demands of new industrial facilities like the Shell Polymers Plant in Monaca and will generate large volumes of wastewater. The need to dispose of these materials has resulted in risky solutions, including the use of brines as a road de-icing agent and the disposal of waste in publicly owned treatment facilities and landfills. Given that there is strong participation in source water protection efforts, such structures can be used to prevent novel contamination from these emerging threats through water system coordination and action.

Recommendations

- Create structures that allow systems who cannot meet PENNVEST funding requirements to take advantage of PENNVEST opportunities.
- Create collaborative/supportive structures to enable small and otherwise challenged systems to remain public, improving access to high quality, affordable drinking water.
- Continue and expand efforts to address existing inequities in drinking water access. Tie drinking water access to wider measures of health and economic progress to integrate it into comprehensive planning efforts.
- Redouble integration of climate change scenarios into all current and future planning frameworks.
- Transform source water protection structures into entities that can evaluate and mitigate emerging contaminant threats to water quality.
- Explore the feasibility of regionalization and what it would look like operationally.

The problems outlined in this report are local and pertain to Allegheny County. However, the challenges faced by Allegheny County's water systems, as well as the ratepayers and residents, are shared by national and global movements to ensure equal access to clean drinking water as a fundamental human right.^{105,106} An equitable clean water future can only become a reality through creative thinking and solutions that address the larger systemic challenges. We hope that the information contained in this report will be used as a tool that empowers water systems, residents, and organizations to achieve more equitable water governance and water justice.

¹⁰⁵ Caitlin Schroering, "Resistance and knowledge production: Social movements as producers of theory and praxis," CS 29 (2019): 73-102, <https://doi.org/10.18046/recs.i29.3181>.

¹⁰⁶ Caitlin Schroering, "Constructing Another World: Solidarity and the Right to Water," *Studies in Social Justice* Volume 15 No. 1 (2021): 102-128, <https://doi.org/10.26522/ssj.v15i1.2435>.

Glossary

Action Level: the concentration of a water contaminant which, if exceeded, may trigger additional treatment or other requirements which a water system must follow. This level may be identical to a Maximum Contaminant Level or associated with a Treatment Technique.

Administrative Violation: violations, as reported by the Pennsylvania Department of Environmental Protection's Drinking Water Reporting System, that are not related to exceedances of the regulatory permissible amount of contamination in drinking water. These include, but are not limited to, violations related to late monitoring reports or a failure to collect the number of required samples. More than two of these violations are deemed in this assessment as unacceptable and result in a "needs improvement" grade.

Board of Directors: a body of individuals, selected through appointment by local elected municipal officials and/or election by the existing Board members, charged with the responsibility to oversee the budget, planning, policy development, evaluation, and executive operations. Operationally, they solely employ and manage the utility manager. This body is only applicable to water systems that are independent water authorities, separate from municipal government.

Community Advisory Committee: a body of individuals, separate and distinct from a Board of Directors, charged with the responsibility to provide stakeholder feedback, ensure community concerns and priorities are centered in utility decision-making, and offer a platform for the water system to partner with content and context experts.

Community Water System ("System"): a public water system that provides water to the same population year-round. Examples are municipal systems, authorities, and mobile home parks or residential developments with their own water supplies.¹⁰⁷

Consumer Confidence Report (CCR) Lead Levels: the amount of lead that 90% of the sampled taps were at or above. This is reported in a community water system's annual Consumer Confidence Report. If this level is above 15 ppb, that means 90% of the sampled taps exceeded federal lead action level, and interventions will be required.

Consumer Confidence Report: an annual, publicly available report produced by community water systems to ensure that customers are aware of the quality of the drinking water supplied to them. This report includes information about the service area, source water, regulatory monitoring results, and recommendations for ratepayers to reduce risk of exposure to contaminants.

¹⁰⁷ Department of Environmental Protection, *Pennsylvania Public Water Compliance Report for 2020*, (Harrisburg, PA: Bureau of Safe Drinking Water, 2020), https://files.dep.state.pa.us/Water/BSDW/DrinkingWaterManagement/PublicDrinkingWater/PA_DEP_2020_Annual_Compliance_Report_Final.pdf.

Contaminant of Emerging Concern (“Emerging Contaminant”): a chemical or material characterized by a perceived, potential, or real threat to human health or the environment or by a lack of published health standards. A contaminant also may be “emerging” because of the discovery of a new source or a new pathway to humans.¹⁰⁸

Contaminant: any physical, chemical, biological, or radiological substance or matter in water. Drinking water may reasonably be expected to contain at least small amounts of some contaminants. Some contaminants may be harmful if consumed at certain levels in drinking water. The presence of contaminants does not necessarily indicate that the water poses a health risk.¹⁰⁹

Contamination-related Violation: violations, as reported by the Pennsylvania Department of Environmental Protection’s Drinking Water Reporting System, that are related to exceedances of the regulatory permissible amount of contamination in drinking water. One or more of these violations are deemed in this assessment as unacceptable and result in a “needs improvement” grade.

Customer Assistance Program (CAP): a formal initiative implemented by a water system to reduce and/or eliminate the ratepayer costs associated with water consumption. These programs may include, but are not limited to, bill discounts and income-based rate structures.

Debt Forgiveness Program: a permanent affordability protection and/or program that extinguishes the outstanding money, associated with water bills and any fees, owed to a water system. This program is typically available only to eligible ratepayers.

Disinfection: the removal, deactivation or killing of pathogenic microorganisms, often through the addition of a chemical to water. Microorganisms are destroyed or deactivated, resulting in termination of growth and reproduction.¹¹⁰

Environmental Justice Community: any census tract where 20% or more individuals live at or below the federal poverty line, and/or 30% or more of the population identifies as a non-white minority, based on data from the U.S. Census Bureau and the federal guidelines for poverty. The Pennsylvania Department of Environmental Protection defines these communities as “EJ Areas.”

Federal Lead and Copper Rule: a 1991 regulation developed to limit the amount of lead and copper in drinking water. This rule requires treatment techniques and other interventions based on the results on monitoring efforts at ratepayer taps. It sets Action Levels for lead (15 ppb) and copper (1.3 ppm) for more than 10% of customer taps sampled.¹¹¹ In 2021, the first major revision of this rule was adopted, and additional improvements will be released before the end of 2024.

¹⁰⁸ Connecticut Department of Energy & Environmental Protection, “Contaminants of Emerging Concern,” Accessed on Feb 6, 2023, <https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Contaminants-of-Emerging-Concern/Contaminants-of-Emerging-Concern>.

¹⁰⁹ Environmental Protection Agency, “Definition of “Contaminant,” Accessed on Feb 6, 2023, <https://www.epa.gov/ccl/definition-contaminant#:~:text=The%20Safe%20Drinking%20Water%20Act,certain%20levels%20in%20drinking%20water>.

¹¹⁰ Lenntech, “What is water disinfection?” Accessed on Feb 6, 2023, <https://www.lenntech.com/processes/disinfection/what-is-water-disinfection.htm#:~:text=Water%20disinfection%20means%20the%20removal,termination%20of%20growth%20and%20reproduction>.

¹¹¹ Environmental Protection Agency, “Lead and Copper Rule,” Accessed on Feb 6, 2023, <https://www.epa.gov/dwreginfo/lead-and-copper-rule>.

Federal Poverty Line/Level: an annual measure determined by the U.S. Census Bureau that compares pre-tax cash income against a threshold that is set at three times the cost of a minimum food diet in 1963 and adjusted for family size.¹¹²

Full Lead Service Line Replacement: the removal of a lead service line in its entirety, meaning from the main line to the building inlet, and then the installation of a new non-lead service line. This assessment did not inquire about the replacement of any lead pigtails, goosenecks, or other fittings that may have been connected to the lead service line.

Grading Criterion/Criteria: an individual topic for which we assigned a grade ranging from “needs improvement” to “best practice.” Some systems received “unresponsive” or “not applicable” grades depending on the data obtained.

Lead Service Line Inventory: the compilation of parcel level records, through visual inspections or other methods, of lead service lines. This includes records for both the publicly owned and privately owned sides of an active, or presumed to be active soon, service line.

Lead Service Line: a service line made of lead which connects the water main to the building inlet. It also includes any lead pigtail, gooseneck, or other fitting which is connected to the lead service line.¹¹³

Low-Income Household Water Assistance Program (LIHWAP): a temporary emergency program that offers grants of up to \$2,500 to low-income families to pay overdue water bills. This is a federal program administered by state governments.

Low-Income: a gross household income at or below 150% of the federal poverty line

Maximum Contaminant Level (MCL): the maximum permissible level of a contaminant that is allowed in drinking water, determined after consideration of the best available treatment technology and a cost-benefit analysis of public health and managing contamination. MCLs are enforceable standards; once exceeded, a set of treatment, monitoring, and risk communication requirements are triggered.¹¹⁴ These standards are set by the National Primary Drinking Water Regulations.

¹¹² Institute for Research on Poverty, “How is Poverty Measured?” Accessed on Feb 6, 2023, <https://www.irp.wisc.edu/resources/how-is-poverty-measured/>.

Moratorium on Shut-offs: a formal policy adopted by a water system to abstain from disconnecting active ratepayers' water service regardless of payment status. This moratorium can be set for a range of time or in response to weather or temperature, or upheld permanently.

National Primary Drinking Water Regulations (“primary standards”): legally enforceable standards that apply to public water systems that are intended to protect public health by limiting the levels of contaminants in drinking water.

National Secondary Drinking Water Regulations (“secondary standards”): non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. US EPA recommends secondary standards to water systems but does not require systems to comply with the standard. However, states may choose to adopt them as enforceable standards.

Not Applicable: an alternative grade assigned to water systems assessed in this report when the grading criterion does not apply to the system’s circumstances. This was determined by system structure for the Board of Directors Meeting Accessibility criterion and upon request of the system for the lead-related criteria.

Partial Lead Service Line Replacement (“partial”): the removal of a portion of a lead service line and replacement of that portion with non-leaded material. “Correcting former partials” means replacing the private side of a lead service line where any excluded or non-excluded partial took place.

Payment Plans (*Permanent Affordability Protection*): An arrangement between a water system and a ratepayer who is behind on their water bills to pay back their debt over time in fixed, agreed upon amounts.

Pennsylvania Department of Environmental Protection (PA DEP): an agency of the Commonwealth of Pennsylvania whose mission is to protect Pennsylvania's air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. It contains the Bureau of Safe Drinking Water, which is charged with managing the federally delegated drinking water program and implements both the federal and state Safe Drinking Water Act and associated regulations.

PENNVEST (Pennsylvania Infrastructure Investment Authority): an agency of the Commonwealth of Pennsylvania that provides low-interest loans and grants for new construction or for improvements to publicly or privately-owned drinking water, storm water or sewage treatment facilities, as well as non-point source pollution prevention best management practices.

¹¹⁵ Environmental Protection Agency, “Drinking Water Regulations and Contaminants,” Accessed on Feb 6, 2023, <https://www.epa.gov/sdwa/drinking-water-regulations-and-contaminants>.

¹¹⁶ Environmental Protection Agency, “Drinking Water Regulations and Contaminants.”

¹¹⁷ Department of Environmental Protection, “Bureau of Safe Drinking Water,” Accessed on Feb 6., 2023, <https://www.dep.pa.gov/Business/Water/BureauSafeDrinkingWater/pages/default.aspx>.

Permanent Affordability Protection: a set of long-term, indefinite policies, procedures, and programs that reduce and/or eliminate the ratepayer costs associated with water consumption that ensure the human right to access drinking water is maintained regardless of payment status. In this report, temporary programs such as the Low-Income Household Water Assistance Program are not considered Permanent Affordability Protection.

Privatization: the process through which a community water system turns over their operations or full ownership of the system to private companies, becoming a private water system instead of a public water system.

Private Water System: a system that is investor-owned that provides piped water for human consumption.

Public Utility: an organization that provides essential services to the general public. This includes all types of ownership—public or private—and in this report refers specifically to drinking water service.

Public Water System: a system that is owned by a municipal or authority and provides piped water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year.

Ratepayer: an individual or organization that pays for consuming or utilizing drinking water from a specific water system.

Remunicipalization: the process through which a previously privatized community water system returns to a public water system.

Report Card: the document summarizing the grades and contextual findings for each grading criterion for an individual community water system. Each report card includes grades for Transparency, Affordability, and Water Quality, as well as general system data and a narrative describing the grading process.

Residential Lead Testing: a voluntary service community water systems offer to ratepayers who wish to know the lead levels in their home's drinking water. For the purposes of this report, this testing includes services offered for any cost (including free) and conducted by any certified party (i.e., water system staff or a third party). This does not include testing offered as part of the monitoring efforts required by the Federal Lead and Copper Rule because it cannot be offered to ratepayers in an impromptu manner and is only available to a limited number of customers.

¹¹⁸ Department of Environmental Protection, Pennsylvania Public Water Compliance Report for 2020.

Right to Know Request: the process through which public information can be obtained through a direct ask of the public entity with such records. In Pennsylvania, the Right-to-Know Law was passed in 2008 to establish a presumption that all records are public and available to citizens and requiring state and local governments to prove why they are legally justified in withholding records.¹¹⁹

Rubric: a chart documenting the rationale for a community water system's grade in every grading criterion. Full circles are those items that are a current practice and basis for the grade. Half circles are those items that are recognized practices.

Safe Drinking Water Act (SDWA): legislation passed by Congress in 1974, with amendments added in 1986 and 1996, to protect the quality of drinking water. Under the SDWA, the US EPA sets the standards for drinking water quality and monitors states, local authorities, and water systems who enforce those standards.¹²⁰

Service Connection: the water pipe, valves, and other facilities by means of which the utility conducts water from its distribution mains to the meter and meter box located at a specified place of delivery of water to a parcel of land.¹²¹

Source Water Assessment: an evaluation of public water system sources that involves the identification of the area supplying water to the source, an inventory of potential and existing contaminants in that area, a determination of water system susceptibility to contamination and informing the public of the results.

Source Water Protection (SWP) Plan/Program: a comprehensive program implemented at the local level that is designed to protect drinking water sources used by public water systems from contamination based on the results of the state-provided source water assessment. Source water protection programs can take one of two forms – watershed protection for surface water sources (streams, reservoirs, ponds, lakes, etc.) or Well Head Protection for groundwater sources (wells, springs, etc.).¹²² Source Water Protection Plans are developed according to a water system's Source Water Assessment and guide the implementation of a Source Water Protection Program.

Source: the place from which water for a public water system originates or is derived, including, but not limited to, a well, spring, stream, reservoir, pond, lake, or interconnection.¹²³

¹¹⁹ Office of Open Records, "About the Office of Open Records," Accessed on Feb 6, 2023. <https://www.openrecords.pa.gov/AboutOOR.cfm>.

¹²⁰ Center for Disease Control and Prevention, "Drinking Water Standards and Regulations," Accessed on Feb 6, 2023, <https://www.cdc.gov/healthywater/drinking/public/regulations.html>.

¹²¹ Environmental Protection Agency, *Lead and Copper Rule: Summary of Revisions*.

¹²² Department of Environmental Protection, *Source Water Protection Grant Program Supplemental Instructions (Wellhead or watershed protection)*, (Harrisburg, PA: Bureau of Water Supply Management, 2021), <https://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/SourceProt/source/SourceWaterProtectionTraining/pdf/GrantProgram.pdf>.

¹²³⁻¹²⁴ Pennsylvania Code, *Safe Drinking Water*, 25 Pa. Code Ch. 109, (September 2, 1971), (short form: 25 Pa. Code § 109), <http://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter109/chap109toc.html&d=reduce>.

Surface water: water open to the atmosphere or subject to surface runoff. The term does not include finished water. For example, the Three Rivers in the Pittsburgh area would all be considered surface water.¹²⁴

Tiered Income Assistance (*Permanent Affordability Protection*): a program that reduces (or eliminates) the cost of water for ratepayers whose income falls below a set threshold.

United States Environmental Protection Agency (US EPA): an independent executive agency of the United States federal government tasked with environmental protection matters, including the implementation of the requirements and rulemaking put forth in the Safe Drinking Water Act.

Unregulated Contaminant: any contaminant that is suspected to be present in drinking water and does not have health-based standards set under the Safe Drinking Water Act (SDWA). The SDWA's Unregulated Contaminant Monitoring Rule (UCMR) requires the periodic release of a set of priority contaminants for mandatory monitoring by large water systems and some smaller public water systems.¹²⁵

Water Authority: a community water system incorporated by a city of the third class, a borough, a town, or a township to provide water services. While associated with a municipality, Authorities are politically and operationally independent from municipal governments.

Water Department: a community water system owned by a municipality of any kind. This system is managed directly by a municipality.

Water System ("System"): a water system in the broadest terms, meaning any public or private water system.

Written Complaint Form: an online method for water system ratepayers to submit complaints, problems, and/or grievances in writing.

¹²⁵ Environmental Protection Agency, "Learn About the Unregulated Contaminant Monitoring Rule."

¹²⁶ Pennsylvania General Assembly, *Municipal Authorities Act*, Chapter 53 § 5602 (June 19, 2001), <https://www.legis.state.pa.us/cfdocs/legis/LI/consCheck.cfm?txtType=HTML&ttl=53&div=0&chpt=56>.

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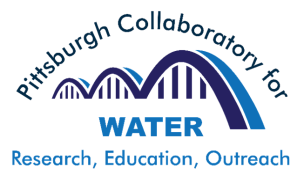
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