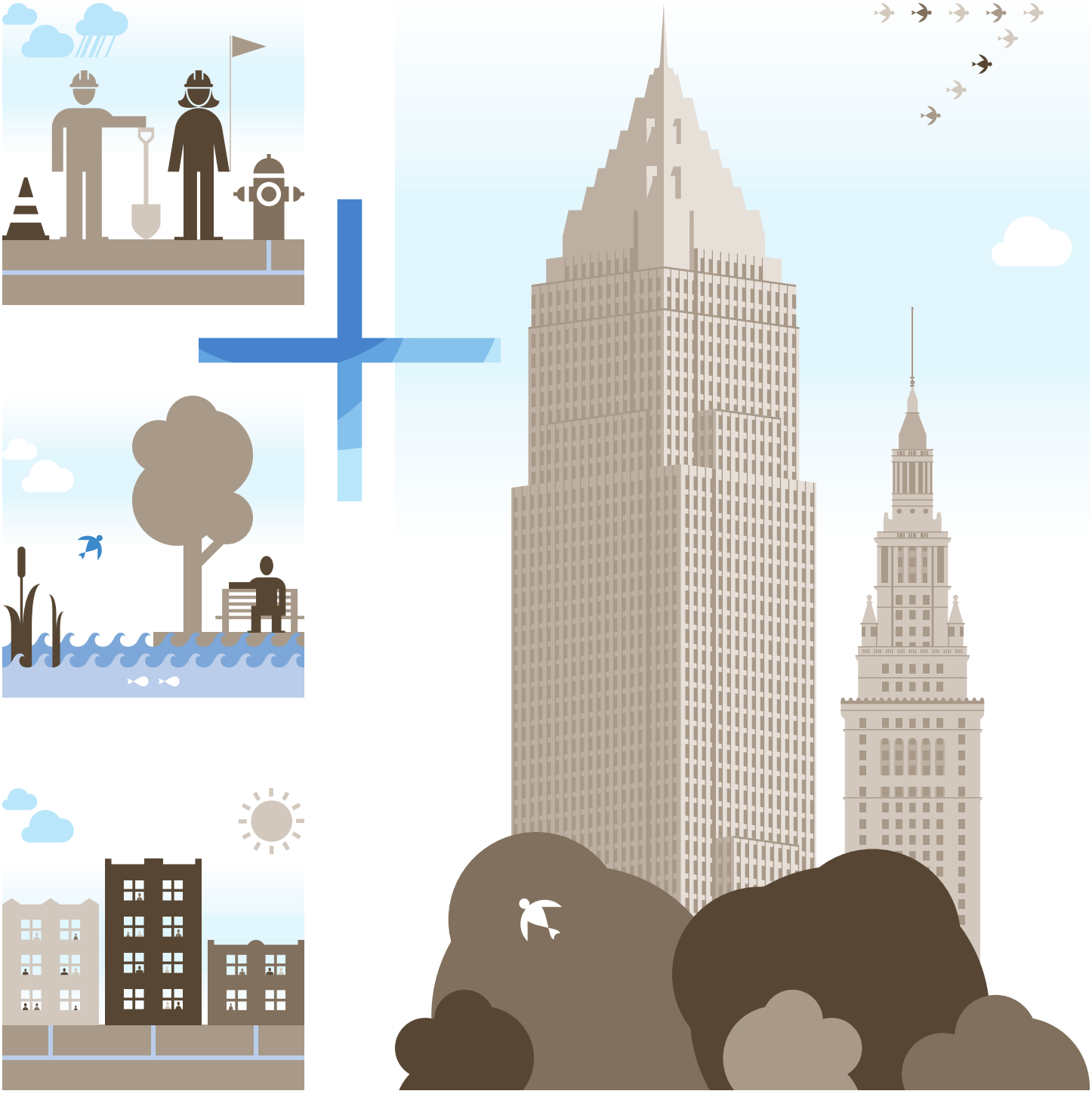
US Water Alliance

AN EQUITABLE WATER FUTURE
Cleveland



ABOUT THE WATER EQUITY TASKFORCE

Water shapes economic growth, the environment, and the social fabric of our communities. Ensuring that all people have access to safe, reliable, and affordable water and wastewater systems is the cornerstone of a sustainable and prosperous nation. We all have a role to play in forging progress.

The Water Equity Taskforce is a network of cities that work together to develop more equitable water policies and practices. Convened by the US Water Alliance—and composed of cross-sector teams in the cities of Atlanta, Buffalo, Camden, Cleveland, Louisville, Milwaukee, and Pittsburgh—this initiative is advancing understanding of the challenges, opportunities, and promising interventions to promote equitable water management.

Cleveland's Water Equity Taskforce brings utility managers, community representatives, and local philanthropy to a shared table. The team developed this report as a call to action to align the resources and capacities of a range of stakeholders to advance equity and inclusion in Northeast Ohio through smart water management.

Cleveland Water Equity Taskforce

Burten, Bell, Carr Development, Inc.
CHN Housing Partners
City of Cleveland Ohio — City of Cleveland, Mayor Frank G. Jackson
City of Cleveland Water — At Your Service
Cleveland Foundation
Cleveland Neighborhood Progress
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Cray Consulting Group
Drink Local Drink Tap
Emerald Cities Cleveland — America empowered.
Environmental Health Watch
The George Gund Foundation
Northeast Ohio Regional Sewer District
Slavic Village
Sustainable Cleveland 2019

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INTRODUCTION

Water is central to Cleveland's history and vital to its residents' quality of life. The city's location, at the mouth of the Cuyahoga River and on the shore of Lake Erie, made it a primary hub of trade in the Great Lakes region. Though the city struggled with the effects of deindustrialization, Cleveland is now held up as an example of how older industrial cities can revitalize their economies.

Regional leaders have established a strong tradition of working together to protect and preserve Cleveland's water resources. However, the city's water future faces ongoing challenges, from the impacts of a changing climate to concerns about affordability. As Cleveland and the surrounding region continue to invest in water resources and infrastructure, it is critical that stakeholders deepen their focus on equitable and inclusive water management and strengthen community engagement in defining the city's water future.

The Cleveland Water Equity Taskforce was convened with a goal of finding ways to ensure that all residents of northeastern Ohio have access to thriving local economies, community vitality, and healthy ecosystems through equitable water management. The intent is to establish practices and policies that will allow residents to reconnect with the region's water resources; to understand and engage in decision processes about water infrastructure; and to benefit equitably from the community's continued investments in water.

This report begins with a description of Cleveland's demographics and socioeconomic context, and it goes on to discuss water equity challenges in the region. For each of these challenges, the report concludes with recommendations to advance water equity in Cleveland.

Defining Terms

Water Equity. Equity refers to just and fair inclusion—a condition in which everyone has an opportunity to participate and prosper. Water equity occurs when all communities have access to safe, clean, affordable drinking water and wastewater services; are resilient in the face of floods, drought, and other climate risks; have a role in decision-making processes related to water management in their communities; and share in the economic, social, and environmental benefits of water systems.

Water Stress. Water stress occurs when individuals and communities face difficulty in accessing water services. It can include inadequate access to drinking water, wastewater, and stormwater services for everyday needs—whether due to lack of infrastructure, difficulty paying for services, or poor water quality. Water stress encompasses water-related climate impacts such as floods, droughts, and rising sea levels.

Vulnerable Communities. Vulnerable communities face barriers to economic and social opportunities and a healthy environment, due to historic and contemporary discriminatory practices. These communities may include low-income people, certain communities of color, immigrants, refugees, seniors, children, people with disabilities, people with limited English-speaking ability, rural communities, tribal communities, people living in unincorporated areas, people living in public housing, and currently or formerly incarcerated people.

BACKGROUND

Understanding Cleveland's history and demographic landscape is crucial to advancing equitable water management, because water challenges are deeply connected to spatial, economic, environmental, and social conditions. Here we provide a brief summary of the city's demographic and economic landscape.

While this roadmap appropriately focuses on the City of Cleveland, it is also important to consider demographics throughout the service area. Cleveland Water and the Northeast Ohio Regional Sewer District (Sewer District) are regional utilities that cover large service areas, as well as serving Cleveland. The social and economic diversity of their service areas is an important consideration when discussing areas of focus and available solutions.

Cleveland Water, part of the City of Cleveland Department of Public Utilities, provides drinking water to 1.4 million customers in 80 communities across 640 square miles. It is the largest supplier of water in the State of Ohio and the tenth largest municipal drinking water provider in the United States. The Sewer District is the largest wastewater treatment provider in the state of Ohio, spanning 380 square miles and serving one million residents in 62 communities. Also part of Cleveland Public Utilities is Cleveland Water Pollution Control (WPC). WPC is responsible for managing the sanitary sewer and stormwater collections systems in the City of Cleveland, while the Sewer District is responsible for interceptors (large sewer pipes that carry wastewater to plants) and wastewater treatment. The Sewer District's Regional Stormwater Management Program handles stormwater runoff from hard surfaces. Runoff contributes to regional stream flooding, erosion, and water quality issues, and the program improves the utility's ability to further address stormwater problems that cross community boundaries.

Population

Cleveland's population was 389,165 in 2016.[1] The population has declined for almost 70 years since reaching its maximum of 914,808 in 1950.[2] In that time, population changes varied by race and ethnicity. White and Native American populations decreased, while Black, Latinx, and Asian/Pacific Islander populations increased substantially. Declining population can negatively impact water systems through both aging infrastructure and reduced water demand. However, since drinking and wastewater services in Cleveland are provided by regional utilities, the declining population of the urban core and the issues related are somewhat offset by the overall steady population of both systems' larger service areas.

Race, Ethnicity, and Language

Race and ethnicity are strongly correlated with disparities in health, exposure to environmental pollution, and vulnerability to natural hazards.[3] People of color are a majority in Cleveland, at 65.9 percent of the population. Black residents are the largest population group (50.8 percent), followed by whites. The growing Latinx population now makes up 10.9 percent of Cleveland's population. In addition, 12.6 percent of Clevelanders over the age of five speak a language other than English at home, with the most common by far being Spanish at eight percent.[4] Given the sizable non-native English speaking population, it is important to provide information on utility services in languages that residents speak.

Income

In 2016, median household income in Cleveland was $26,583—significantly lower than the national median of $55,322.[5] The wage gap between white people and people of color has increased in the last 25 years. In 2015, median hourly wages for whites had increased to $19, while wages for people of color were at $15.[6]

Employment

Like many cities in the Great Lakes region, Cleveland has been affected by the decline of the manufacturing industry since the 1950s. In just 10 years, from 2000 to 2010, 35 percent of manufacturing jobs in the Great Lakes region were lost,[7] while the greater Cleveland area lost 87,900 jobs in this sector.[8]

Today, Cleveland is moving from a manufacturing to knowledge-based economy anchored in establishing a global hub of health, education, and technology.[9] This is reflected in downtown Cleveland, where 40 percent of residents are employed in healthcare or professional, scientific, and technological services.[10] Yet inequities in unemployment rates persist: For people of color, unemployment was at 20.6 percent in 2015, as opposed to 10.1 percent for white residents.[11]

Poverty

Economic status is one of the strongest predictors for compromised health and capacity to recover from disruptions. In 2015, 42.5 percent of people of color in Cleveland lived below twice the federal poverty level, compared to 24.1 percent of white Clevelanders.[12] According to a 2019 study, two-thirds of low-income Cuyahoga County residents (residents with annual household incomes below $25,000) had serious difficulty paying for at least one necessity in the past year. Thirty-four percent reported having to choose between paying for food or utilities in the past year, and 30 percent said they would not be able to pay for a $400 emergency.[13]

Educational Attainment and Literacy

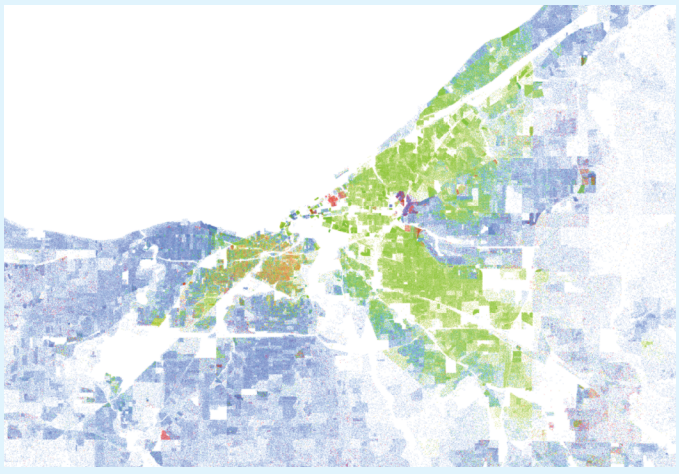
People with low levels of educational attainment have less access to stable, well-paid employment and medical insurance. By 2020, 41 percent of jobs in Cleveland will require an associate's degree or higher, but the education system is not adequately preparing people of color for these jobs.[14] More than half of Cleveland's population over 25 years of age has a high school diploma or lower, and just over a quarter have an associate's degree or higher. Nearly 80 percent of adults in Cleveland lack the educational qualifications that will be required for two-fifths of local jobs in 2020. According to a 2009 study, 69 percent of adults in Cleveland, and 46 percent in Cuyahoga County, read at or below the seventh grade level.[15] People with low reading levels can have severe economic disadvantages and find it harder to get or keep even a minimum wage paying job.

Housing and Residential Segregation

Families with housing costs exceeding 30 percent of their income are considered housing-cost burdened and may need to make sacrifices to pay for housing costs—such as choosing between utilities, food, healthcare, and other necessities. In Cleveland, 36.9 percent of property owners have a mortgage above 30 percent of the household income and 51.1 percent of renters pay more than 30 percent of their income toward housing.[16]

Residential segregation is a major driver of racial and economic inequality, as it affects access to employment, educational attainment, exposure to crime, environmental pollution, access to food and recreation, and quality of life in general.[17] Cleveland is one of the most racially segregated cities in the US, with many Black residents living east of downtown and whites living outside of the city limits.

Map 1:
Residential Segregation by Race/Ethnicity, Cleveland, 2010[18]



People of color are much more likely than their white counterparts to live in high-poverty zones.[19,20] While 28 percent of whites live in high-poverty neighborhoods, over 40 percent of Latinx, Asian, and Native American residents live in similar neighborhoods. Nearly half of Black residents live in high-poverty neighborhoods.

WATER EQUITY CHALLENGES

On top of the socioeconomic challenges they face, members of Cleveland's vulnerable communities also experience water stress more intensely. Residents with lower incomes, less job security, and poor-quality housing will struggle more acutely with the impacts of rising bills and increased flooding, for example. In this light, the Cleveland team has identified the following water equity challenges as focus areas for action and improvement.

Aging infrastructure

Cleveland Water and the Sewer District operate complex systems to support their large service areas. Cleveland Water has four water treatment plants (each with its own separate intake in Lake Erie), 16 pump stations, 22 water tanks and towers, and 5,300 miles of water mains. The Sewer District's system, which treats 90 billion gallons of wastewater per year, includes three wastewater treatment plants—Easterly in Bratenahl, Westerly in Cleveland, and Southerly in Cuyahoga Heights—and more than 330 miles of sewers, as well as 476 miles of the Regional Stormwater System under the Sewer District's Regional Stormwater Management Program.

Like utilities across the country, both systems must address aging infrastructure as the costs of maintenance and repair rise. Some of Cleveland's underground water and sewer infrastructure is more than 100 years old; and all infrastructure, regardless of age, requires continual inspection, operation, and maintenance. The average water main in the Cleveland Water system is 67 years old. Leaks in the drinking water system result in water loss. Stormwater infrastructure and natural drainage systems need repair and maintenance.

Over the last 30 years, Cleveland Water has spent more than $1.6 billion on infrastructure updates. After spending 15 years and $630 million modernizing and rebuilding its four water treatment plants, Cleveland Water was able to shift the focus of its Capital Improvement Plan to underground and secondary infrastructure. Approximately 40 percent of Cleveland Water's budget goes toward infrastructure, including debt payments on completed projects and funding for new ones. Annually, about $26 million in capital funds is spent on replacing aging water mains. This level of funding is intended to meet the industry standard of replacing one percent of a system's underground infrastructure annually. In 2018, $7.6 million was spent on replacing 24,311 feet of mains in the City of Cleveland. Main replacement projects outside of the City of Cleveland are funded through the Suburban Water Main Replacement Program. Both suburban and Cleveland main projects are targeted to older mains with higher rates of failure, as well areas where lead is likely to be present—both of which tend to fall within vulnerable communities.

Cleveland Water Pollution Control spent $48.8 million on infrastructure from 2015 to 2018, including $20 million on sewer and catch basin repair and $17.3 million on street-level sewer projects. These investments were funded in part by a 2015 rate increase. However, this level of infrastructure investment will not keep pace with the requirements of a rapidly aging system. Thirty-eight percent of WPC's infrastructure is 100 years old or older, and without increased investment that percentage will continue to rise as more of the system's underground infrastructure approaches the 100-year mark.

The Sewer District has made many investments to reduce combined sewer overflows, or CSOs. Portions of the Sewer District's service area has a combined sewer system that collects domestic sewage and urban runoff in a single pipe. During severe storms, the combined sewer system can overflow and release untreated sewage into waterways and Lake Erie. The Clean Water Act and other state and federal policies require the Sewer District to implement a Long-Term Control Plan to reduce or eliminate the CSOs from its 126 permitted outfalls. In 2010, the District entered into a consent decree with the Ohio and US Environmental Protection Agencies, the US Department of Justice, and the Ohio Attorney General's Office, agreeing to launch a 25-year, $3 billion CSO Long-Term Control Plan. The plan is called Project Clean Lake.[21] Prior to Project Clean Lake, the District had invested an estimated $850 million

and reduced annual CSO volumes by half – from 9 to 4.5 billion gallons since 1972. When Project Clean Lake is complete in 2036, CSO volumes will be reduced by another four billion gallons annually.

Project Clean Lake will accomplish these goals using a combination of large tunnels and new sewer infrastructure, treatment plant expansions, and green infrastructure. The Sewer District is constructing seven tunnels ranging in size from two to five miles in length; they are as deep as 300 feet underground and up to 24 feet in diameter. Currently, four tunnels are either complete or under construction. Green infrastructure is a critical component of Project Clean Lake and allows the storage, infiltration, and evaporation of stormwater before it gets to the combined sewer system, potentially reducing long-term costs while enhancing neighborhoods and providing economic development opportunities. Since entering the consent decree, the Sewer District has made $1.8 billion in infrastructure investments and expects to spend an additional $1.2 billion over the next decade.

Wastewater infrastructure investments are funded through wastewater rates and have resulted in wastewater rate increases most years since 1990. However, the Sewer District has realized $430 million in Project Clean Lake savings through value engineering. The Sewer District is preparing for its 2021 rate study, which will look at its long-term financial rate model and determine the necessary anticipated rate increases for 2022–2026 to sustain its financial requirements.

Affordability

As the minimal funding that once existed at the state and federal level for water and wastewater systems continues to shrink, Cleveland Water and the Sewer District are left entirely reliant on ratepayer revenue to fund infrastructure projects. This means that ratepayers directly bear the growing burden of infrastructure costs. As the utilities set rates, they must balance the high costs of maintaining, repairing, and replacing infrastructure with equity and affordability considerations.

Cleveland Water serves 80 communities in four zones, categorized by their distance from Lake Erie. Customers further from the lake are charged more due to the additional cost of pumping water. Cleveland residents see the lowest rates, with an average monthly bill in 2019 of $27.10*.[22] This rate is relatively low compared to other large water utilities.[23] Cleveland Water sets rates every five years by conducting a study that must be adopted by the city council. Every 10 years, a comprehensive financial plan is conducted in conjunction with the rate study. Their current rate schedule is set through 2020.

The Sewer District's average monthly bill in 2018 is just over $60,[24] slightly higher than other large sewer utilities.[25] Sewer rates are also set every five years. From 2017 to 2021, sewer rates will increase 8.3 percent annually, increasing the average bill by about $4 per month each year. The most recent sewer rate study, implemented in 2017, is expected to keep rates in the medium burden tier through 2021, as defined by EPA's financial capability assessment framework. But by 2026, it is estimated that sewer bills will become a higher cost burden for ratepayers.

Traditionally, utilities have evaluated rate affordability using EPA's financial capability assessment framework, which measures a community's average household water costs as a percentage of Median Household Income (MHI). Rates that are lower than two percent of MHI are deemed "affordable." This framework has drawn criticism for several reasons, including that it doesn't account for other non-discretionary household costs which can exacerbate affordability challenges for low-income households, such as housing or other utility bills.

Newer methods approach affordability more holistically and hyperlocally. Dr. Manny Teodoro introduced a new methodology in 2018 that measures household-level affordability as the ratio of water and sewer costs to disposable household income for low-income customers. It includes a complimentary measurement that calculates the hours worked at minimum wage that would be necessary to pay for water and sewer service.[26]

Addressing affordability is also difficult because approximately 58 percent of Cleveland households are renters, compared to only 36.4 percent of US households. Existing water affordability programs are targeted to property owners, rather than directly to renters. In addition, if landlords do not pay water and sewer bills, it can lead to a water shut-off and potentially threaten renters' housing, through no fault of their own.

*Based on 0.6 MCF (1,000 cubic feet) of usage.

Water quality

Cleveland and the Northeast Ohio region have consistently high-quality drinking water. Recent water quality crises in Flint, MI and Toledo, OH have affected public perceptions about drinking water, but Cleveland is not as vulnerable to lead and algal bloom issues as those cities. As is the case with many older US cities, some homes in Cleveland and the surrounding suburbs have lead service lines or plumbing fixtures. Cleveland Water takes several actions to reduce the risk of lead leaching into drinking water, the most successful of which is the addition of ortho-phosphate to the water treatment process, which began in 1997. Since then, lead testing results have been well below EPA's action level of 15 parts per billion (ppb).

Service lines, plumbing components, and fixtures that contain lead are more likely to be found in homes built before 1986. In addition, some pre-2014 faucets and fixtures can still contain up to eight percent lead. The risk of lead leaching into water increases when plumbing is poorly or improperly maintained. While Cleveland Water proactively replaces all lead city-owned service lines and connections during water main repair and replacement projects, customers are responsible for maintaining and replacing their service lines, home plumbing, and fixtures. For many low-income residents, the cost of maintenance or replacement can be prohibitive. Renters may have landlords who are not taking action to reduce lead in plumbing, and landlords that do replace lead components may raise the rent to cover expenses, creating a cost burden for tenants.

Lake Erie water quality issues are less likely to impact drinking water quality in Cleveland because of the location of the city and the water system's intakes. The harmful algal blooms (HABs) that affect Toledo are due to agricultural runoff and the fact that the lake's Western Basin is shallow. Cleveland is located on the Central Basin of Lake Erie, which is much deeper. More importantly, the city's water intakes are located miles from the shore, meaning that the water pulled in for treatment is less likely to be affected by land-based pollutants and river runoff. Historically, the water entering treatment plants has had no detectable levels of the toxins produced by HABs.

However, HABs still create issues in the Central Basin in the form of hypoxic water. When large HABs die off, dissolved oxygen levels in the water decline dramatically. When dissolved oxygen drops below levels that support normal aquatic life, the water is called hypoxic. Hypoxic water doesn't present a health or safety concern, but it can cause taste and odor issues in drinking water.

Microplastics and PFAS (per- and polyfluoroalkyl substances, or chemicals that are found in many manufactured items) are areas of emerging concern for water quality. Because of their relatively recent emergence, both areas do not yet have standardized methods or regulatory requirements for monitoring and testing. More work still needs to be done to determine their health impacts and prevalence locally. Currently, there is no evidence that drinking water quality issues related to microplastics and PFAS disproportionately affect vulnerable communities.

The Sewer District has made dramatic improvements to the water quality in streams, rivers, and Lake Erie over the past 50 years. However, water quality is still affected during storms due to combined sewer overflows. Wet weather can cause unsafe conditions at beaches and waterfront recreational areas. Water quality in Lake Erie is also an equity concern for the low-income Cleveland residents who depend on fish from the lake and its tributaries as a staple of their diet. Some residents who fish are not limiting their consumption, which can put them and their families at risk.

Climate impacts

The changing climate poses several risks for Cleveland's infrastructure and vulnerable communities. More extreme temperatures and severe storms increase the risk of infrastructure failure, floods, algal blooms, and evaporation. Those with limited resources are less likely to be able to address these conditions as they occur and therefore are more likely to experience negative consequences.

As the climate changes, Cleveland has experienced an increase in the frequency and intensity of severe storms, with the city projected to experience up to two additional days of heavy precipitation (more than two inches in 24 hours) per year by the end of the century. This puts additional strain on wastewater systems.

Climate change has made temperatures more extreme. Between 1956 and 2012, Cleveland experienced an increase of 2.4 degrees Fahrenheit in average annual temperature.[27] According to the Great Lakes Integrated Sciences and Assessments Program, temperatures are rising three times faster in Cleveland than elsewhere in the US.[28] In the colder months, extremely low temperatures occur for longer stretches. As the ground freezes, it exerts increased pressure on underground water mains, causing more breaks. The deeper the frost line, the more pressure on the water mains and the more likely the main is to fracture under the pressure.

Flooding

Flooding occurs in the region due to increased impervious surfaces, extreme precipitation events, and erosion of natural systems. Floodwaters can negatively impact health because of bacteria and chemicals in the water, as well as mold that can grow indoors after a flood event.[29] Many of Cleveland's vulnerable communities are located in older parts of the city where flooding is frequent. The Sewer District is developing a regional stormwater master plan to assess all the region's waterways and prioritize construction projects to restore functionality to the stormwater system and creeks, streams, and rivers.

THE PILLARS OF WATER EQUITY

In identifying water equity challenges and solutions, the Cleveland Water Equity Taskforce used a framework created by the US Water Alliance. It is organized around three pillars along which we can make meaningful progress:

PILLAR ONE:

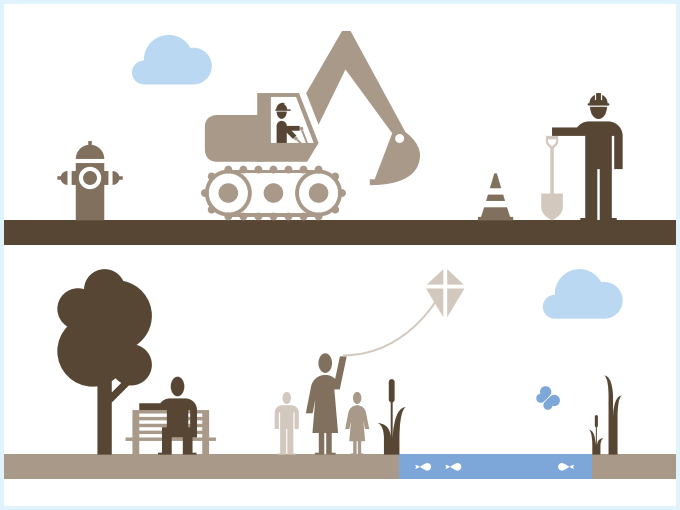
Ensure all people have access to clean, safe, affordable water service.

Millions of people living in America lack access to life's most essential resource. Vulnerable communities around the country struggle with deteriorating systems, unaffordable rates, and source water contamination. Creating an equitable water future means providing all people with access to clean, safe water at a price they can afford. To achieve this, collaboration and co-investment by all levels of government, water providers, the private sector, community-based organizations, and others is critical.

PILLAR TWO:

Maximize the community and economic benefits of water infrastructure investment.

Across the country, utilities and municipalities are investing billions of dollars to address America's infrastructure crisis and bring systems to a state of good repair. Tremendous potential exists to leverage water investments for local employment and career pathways, business development and contracting opportunities, educational programs, and neighborhood improvements.



PILLAR THREE:

Foster community resilience in the face of a changing climate.

The impacts of a changing climate are often experienced as water challenges like flooding, drought, sea level rise, and rising temperatures. Lower-income communities are often the most vulnerable in the face of a changing and unpredictable climate. Climate planning at the utility, city, regional, and state level is one of the principal strategies in preparing for the water impacts of climate change.

RECOMMENDATIONS

Cleveland's water equity challenges are daunting, but they are also opportunities for progress, as achieving greater water equity for vulnerable communities will have widespread benefits. To make progress toward water equity, the Cleveland Water Equity Taskforce identified specific recommendations for action centered on public engagement, affordability, climate resiliency, and workforce development.

Identify target areas

As these recommendations are implemented, it is important to identify the vulnerable communities that are likely to face the most severe impacts. The recommendations should be targeted to the most vulnerable areas, rather than being broadly applied to the whole city. Key factors in identifying target areas include income, poverty, quality of housing stock, number of water shutoffs, and other cumulative factors; for example, neighborhoods that face environmental justice issues or lack transportation access.

Public engagement

To build water equity, it is essential to expand public awareness and engagement while deepening the understanding of community concerns. Building community capacity to engage with water management is critical. Residents of vulnerable communities have deep local knowledge and experience, incorporating their perspectives can lead to better, more sustainable processes and outcomes. Public engagement done right strengthens existing partnerships—and creates new ones—among trusted community-based organizations, utilities, philanthropy, and other stakeholders.

Create a Water Champions Program. The City of Cleveland has a Climate Ambassadors program, in which community members conduct outreach and education on how neighborhoods can become more resilient. The Climate Ambassadors act as liaisons between the City, community organizations, and the public, providing information on climate impacts and addressing questions or concerns from people affected by construction. They connect the public with information and resources to help reduce the risk of flooding, improve neighborhood green spaces, reduce utility bills, and prepare for heat waves.

Building on the success of the Climate Ambassadors program, Cleveland can establish a Water Champions Program in which community representatives connect residents to information about water infrastructure investments and programs and listen to community perspectives on water management decisions. These individuals can be a resource to answer residents' questions about utility bills, water quality, cost-savings programs, and more. Water Champions should receive training on water systems, public engagement, advocacy, and consensus building. They could co-create programming to deepen community engagement. Goals for this program might include building public understanding of water quality issues and the value of water, enhancing utilities' understanding of community needs, and increasing enrollment in cost-savings programs.

Host water equity listening sessions. Cleveland Water and the Sewer District can hold community listening sessions on water issues, hosted and led by trusted community-based organizations, to inform utilities (and their partners) about what residents are experiencing and how existing utility programs, policies, and practices affect them. Community organizations would review the feedback and suggest modifications to utility practices that would improve the community experience and enhance water equity. The information gathered in these sessions could inform future public outreach efforts and the structure of the Water Champions Program. Listening sessions should have translators on hand to make them accessible to non-native English speakers.

Target robust public education campaigns on water quality concerns. A 2019 study found that one-fourth of kindergartners in Cleveland public schools have a history of elevated blood lead levels.[30] While the report identified the primary source of lead exposure as poorly maintained aging and deteriorating housing stock, this issue created

anxiety about drinking water quality because of high-profile lead crises in other cities caused by drinking water. In 2018, Cleveland Water launched a robust Lead Awareness Campaign aimed at providing customers with information on the utility's approach to reducing lead risk, and on actions residents can take to identify lead in their home plumbing and prevent the risk of exposure if lead is found.

However, this information does not always reach those who are most vulnerable. Cleveland Water can better target this information to ensure that it reaches those most at risk for potential exposure to lead in drinking water. This would include childcare facilities and those living in homes with lead service lines and/or older plumbing that could contain lead solder or fixtures containing lead. Informational material on water quality concerns should be made available in Spanish and other languages that are commonly spoken in Cleveland, and outreach campaigns should include components for residents with low literacy levels. Cleveland Water can use input from the listening sessions to enhance outreach, and partner with the local health and housing departments, school district, and other local organizations on a collaborative outreach approach that covers lead concerns consistently and comprehensively.

Affordability

Both Cleveland Water and the Sewer District offer homestead and affordability programs, which reduce rates by 40 percent for ratepayers who qualify based on income, age, and/or disability. The Sewer District offers crisis assistance (one-time bill assistance to customers affected by major life events), and a "summer sprinkling" program that bases summer use (and bills) on average winter consumption, which is typically lower. Both Cleveland Water and the Sewer District also offer plumbing repair assistance for low-income residents. These programs can be strengthened and expanded to make water and sewer services more affordable.

Expand existing cost-savings programs to renters. Renters often pay their water bills indirectly as a portion of their rent payment, and most of the cost-savings programs that local utilities offer are aimed at property owners. Cost-savings programs should be modified to be more accessible to renters, who comprise nearly 60 percent of Cleveland's population. Cleveland Water offers a Tenant Deposit Agreement to renters who face disconnection when their landlord does not pay the water bill. This agreement transfers the water service account to the tenant, allowing them to pay the bill directly. The Sewer District allows renters to obtain a one-time crisis benefit, providing some bill relief during a crisis, but more effective solutions for renters are needed overall.

Cleveland Water and the Sewer District have explored other ideas for assisting renters. For example, guidelines recommending that landlords pass on their water utility savings to tenants, if observed, could significantly reduce the rent burden on tenants who pay for water service through their rent. Expanding tenants' rights workshops with housing service providers and other community-based organizations, where tenants can learn more about their water rights after their landlord is delinquent on bills, could help prevent water shutoffs. Many other cities face similar challenges with reaching renters; cross-city dialogue may reveal additional solutions.

Boost program enrollment. Both Cleveland Water and the Sewer District contract with CHN Housing Partners to manage applications for cost-savings programs. Partnering with a trusted local organization allows the utilities to reach many eligible customers who may not have otherwise signed up for the cost-savings programs, and there is room to expand enrollment. The Sewer District has a goal of increasing eligible customers' participation in its cost-savings programs from 50 percent in 2016 to 80 percent by 2021. CHN Housing Partners targets clients already eligible for their other utility assistance and weatherization programs, as these programs have the same eligibility requirements as water cost-savings programs. CHN can distribute information about the program to other resources in Cleveland, such as food pantries and community centers. The Water Champions program can also help to strengthen awareness of and enrollment in these programs.

Review avenues for customer advocacy. Both Cleveland Water and the Sewer District have different hearing processes if a customer wants to dispute a charge on their bill. Processes should be reviewed to ensure that they are accessible and straightforward for all customers. For example, most hearings occur during the business day. Offering a flexible schedule would make it easier for people to attend.

Revisit eligibility criteria. Increasing enrollment in the water cost-savings programs also raises questions about the programs themselves—for example, whether the definitions of affordability should be expanded, and whether eligibility criteria for the programs are still valid or should be adjusted. It is also important to know how many households are registered in the cost-savings programs and how the programs are serving their needs. The cost of water service is one cost burden on residents who face a multitude of other costs, such as housing and energy. Cleveland Water and the Sewer District should gather more information on current enrollment and best practices for equitable eligibility criteria and make changes to their programs as needed.

Expand conservation education and plumbing repair programs. Since water and sewer bills are largely based on consumption, the simplest and easiest way for residents to save money on both bills is to use less water. The average household plumbing leak can waste more than 10,000 gallons of water every year,[31] and the cost of a running toilet or dripping faucet can run up unnecessary charges on water and sewer bills and even lead to property damage. Moreover, low-income families are more likely to live in homes with these issues. According to EPA, by replacing old, inefficient toilets with newer models the average family can reduce water used for toilets by 20 to 60 percent.[32] The utilities should offer more targeted education on household water conservation and the impact that inefficient fixtures or plumbing leaks can have on usage. Utilities can also offer programs that provide low-income households with assistance or funding for plumbing repairs and upgrades. This could be tied to funding and assistance for the replacement of lead fixtures and customer-owned lead service lines.

Climate impacts and resiliency

Identify vulnerable areas. The City of Cleveland must prepare for climate impacts like increasing temperatures and more extreme weather events in the coming decades. Local stakeholders must focus resiliency efforts on safeguarding residents from flooding and reducing the impact on all communities, particularly those that are especially vulnerable. First, stakeholders should conduct research to identify the areas and communities that are most vulnerable to climate change impacts. Only after identifying those communities can climate resilience initiatives be implemented in an equitable way.

Expand use of planning tools. Utilities and community groups can expand their use of publicly available climate planning tools, such as the Trust for Public Land's Climate-Smart Cities tool. This resource helps governments identify communities vulnerable to climate change, where green infrastructure investments may have the greatest impact in increasing local resilience. The tools overlays maps of environmental factors, heat islands, flood zones, and lead water mains with demographic data on socio-economic vulnerability. This resource can help determine where green infrastructure, demographics, and public health intersect to promote climate equity. Another example is Envision, a free-to-use rating system that uses sustainable best practices to evaluate infrastructure projects and their success in meeting sustainability goals.

Workforce development

Evaluate existing workforce development programs. In 2017, 3,754 people were employed in water-related and urban forestry-related industries in Cleveland, and the average annual income for these professions was $53,792.[33] Future water infrastructure improvements should be tied to workforce development and job training programs focused on the most vulnerable communities of Cleveland and Northeast Ohio. A recent report explored workforce development strategies aimed at increasing Cleveland residents' access to sustainable, living-wage jobs.[34] Among the strategies were collecting data to better understand barriers to employment; assessing and improving employment and hiring policies to deal with those barriers; and streamlining access to the myriad workforce development services available in the region. Starting from the findings and recommendations in that report, Cleveland Water and the Sewer District could spearhead a workforce development study aimed specifically at connecting vulnerable communities to sustainable water sector employment. Resulting recommendations might include policy and procedure changes in hiring, human relations, and procurement, as well as strategies for building the pipeline of future employees.

Modify contracting processes. Infrastructure project contracts should include provisions for hiring local residents and working with local small-, minority-, and women-owned businesses. Both Cleveland Water and the Sewer District have programs that ensure that small-, minority-, and women-owned businesses are awarded contracts and policies have been designed to enhance these businesses' ability to bid successfully, such as removing bonding requirements and insurance on certain contracts. Local hiring is required for delivery of some contracts. Both utilities should remain vigilant about the effectiveness of their procurement programs, exploring ways to further ensure that benefits of infrastructure spending can accrue to members of vulnerable communities. For example, utilities can seek to modify procurement policies to incentivize hiring individuals who participated in local workforce development or job training programs, to help ensure that wages remain in the City of Cleveland, and that members of vulnerable communities have an opportunity to benefit.

Build interest and awareness through education. Workforce development should start before individuals enter the workforce. Since 1994, Cleveland Water has run Cleveland STEP (Student Technical Enrichment Program), targeted at sixth through ninth graders and designed to encourage student participants toward careers in science, technology, engineering, and math by connecting them to businesses, professionals, and educational institutions. This mix of education and professional development and exposure can be tied to internships or shadowing experiences later in high school to continue their connection to what they learned at Cleveland STEP. Going forward, Cleveland's utilities should measure the effectiveness of existing education programs and seek opportunities to improve and expand them, engaging residents in defining approaches that work for students today and help inform and energize them about careers in the water sector.

CONCLUSION

The Cleveland Water Equity Taskforce believes that by implementing these recommendations, we can realize more equitable water management, spread the benefits of economic growth, and help all of Cleveland's communities thrive. Collaboration is a critical component, as implementing these solutions requires a sustained, shared effort among public, private, and nonprofit sectors. The Cleveland Taskforce will maintain its focus on these priorities as we begin implementing solutions together. Our team members also look forward to connecting with other partners and institutions who can use this report to strengthen water equity in their own communities.

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