

Background

Across the United States, communities are grappling with rising water and sewer rates, which are increasingly unaffordable for many low-income households. Nationally, water and sewer bills have been rapidly increasing for more than two decades—even as household incomes have stagnated for most of that time.

The largest national rate survey found that between 1996 and 2018, water and sewer charges increased about 2.5 times as fast as the Consumer Price Index (CPI), a standard measure of inflation for consumer goods and services.¹ Another analysis, based on census data, found that household water and sewer costs more than doubled between 2000 and 2016.² Over the same period, household incomes idled.³ One recent peer-reviewed effort to characterize water affordability nationally, using data from a nationally representative sample of utilities, found that households at the 20th percentile of household income in their city spent an average of nearly 10 percent of their disposable income on essential water and wastewater services.⁴

The rising cost of water and sewer services has severe impacts for households and communities, including economic hardship, mental stress, and the loss of

water access due to forced shutoffs, to name just a few. These impacts are not evenly distributed; lower-income communities and communities of color are especially hard hit. However, unaffordable water bills can affect people everywhere. In multiple states, studies have found that low-income households in communities large and small, rural and urban, experience chronic challenges affording their water bills.⁵ In some places, where rising costs of water and wastewater have collided with entrenched poverty, widespread inability to afford water bills has made the issue impossible to ignore.⁶

In response, communities are organizing around the issue of water affordability and the human right to water. Local water advocates have taken the fight for affordable access to essential water and sewer services to city halls, state legislatures, Congress, courts, and the streets.⁷



Protesters march against mass water shutoffs in Detroit, Michigan on July 18, 2014. (Pictured at second-from-left: Maureen Taylor, chair of Michigan Welfare Rights Organization, a co-sponsoring organization of the rally.)

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This module aims to provide some essential background on water affordability in the United States, as context for the rest of this toolkit. It also introduces some key ideas and frameworks used throughout.

The first section discusses the *definition* of water affordability used in the toolkit. For the most part, we adopt a household-level approach to understanding the subject. This is in keeping with the principle that every person has a human right to safe and affordable water.

Next, the module summarizes some of the *impacts* of unaffordable water. Unaffordable water bills can lead to economic hardship, loss of access to water services due to shutoffs, spiraling debt, loss of housing, loss of parental rights, and myriad other negative consequences. Lower-income households and households of color are particularly likely to suffer these consequences.

Increasingly unaffordable bills also have negative consequences for utility finances, by driving up the number of customers who cannot pay each month and the cost of collecting overdue amounts (including the cost of conducting service terminations).

Then, the module describes some of the *causes* of rising water rates, including decades of underinvestment in water infrastructure and the need to update aging components of water and wastewater systems. On the individual utility level, water rates reflect, among other things, the utility's specific capital needs and operational costs.

Next, the module discusses some *structural features* of the water sector that make addressing water affordability issues particularly challenging, including the highly

fragmented nature of the sector and the relative lack of regulatory oversight of utility finances and consumer protection.

Finally, the module briefly discusses the need to move toward a comprehensive approach to addressing household-level water affordability.

DEFINING WATER AFFORDABILITY AND THE HUMAN RIGHT TO WATER

The issue of water affordability can be understood in different ways, including at the individual household level or generally across a community or an entire state or region. This toolkit approaches water affordability mainly from the perspective of the individual household. We focus especially on issues relevant to lower-income households, since they face the greatest affordability challenges. (As explained in the Introduction module, we focus on affordability for households connected to centralized water and sewer utility service.)

The straightforward, conceptual definition of household-level water affordability that underpins this toolkit is, as one public policy researcher has written, “the ability of individual customers to pay for water and sewer services to meet their basic needs while maintaining the ability to pay for other essential costs.”⁸

There is no consensus approach on how to *quantitatively* define or measure water affordability, however. Methodologies, metrics, and thresholds vary widely across various studies. (See text box: “Are water bills affordable? Where and for whom?”) This toolkit does not offer a preferred methodology.

The conceptual definition above is consistent with the principle of a human right to water, which is recognized by international law.⁹ In the United States, many advocates champion the human right to water as an organizing principle for efforts to secure universal access to safe, affordable water. (See text box: “A human right to safe, affordable water and sanitation.”) The concept of a human right to water is gaining traction even among some leaders in the water utility sector, as reflected in the consensus principles that emerged from a dialogue convened by the Aspen Institute in 2021–22.¹⁰

“The right to safe and clean drinking water and sanitation [is] a human right that is essential for the full enjoyment of life and all human rights.”

SOURCE: UNITED NATIONS GENERAL ASSEMBLY, RESOLUTION NO. 64/292, “THE HUMAN RIGHT TO WATER AND SANITATION,” JULY 28, 2010.

A HUMAN RIGHT TO SAFE, AFFORDABLE WATER AND SANITATION

The human right to water has become a rallying cry for many communities and water affordability advocates in the United States. It can be a powerful mobilizer and source of moral authority to hold those in power accountable.¹¹

The human rights framework—including a right to affordable water—derives from international law.¹² The United Nations General Assembly formally “recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights.”¹³ The General Assembly has further explained that these rights “entitle [] everyone, without discrimination, to have access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use [and] . . . physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, socially and culturally acceptable and that provides privacy and ensures dignity.”¹⁴

Building on these international human rights, advocates in Detroit leveraged a 2011 visit from the United Nations Special Rapporteur on Water and Sanitation to expose the appalling lack of access to basic water and sanitation services among lower-income families—including mass water shutoffs—in Detroit and Flint, Michigan.¹⁵

U.S. courts have been reluctant to recognize any “fundamental right” to water under the federal Constitution.¹⁶ However, a few state constitutions recognize some version of a right to “clean water.”¹⁷ Moreover, at least two states have legislatively recognized a right of access to safe, *affordable* drinking water. California enacted legislation in 2012 recognizing a “right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes” and requiring state agencies to consider this right in their decision making.¹⁸ More recently, the Virginia General Assembly adopted a resolution in 2021 recognizing that “access to clean, potable water in amounts that will ensure an acceptable standard of living is a necessary human right.”¹⁹ The Virginia resolution also specifically addresses water affordability.²⁰

In at least two other states, legislation has been introduced (but not passed) to codify a human right to water; in several others, legislation has been enacted or introduced that cites the human right to water as a foundational principle.²¹

For further reading, resources on the human right to water, including in the domestic U.S. context, have been developed by the Program on Human Rights and the Global Economy at Northeastern University School of Law.²²

A right of access to affordable water service can also be placed in the context of a right to essential utility services more broadly. In 2021, the National Consumer Law Center, the Natural Resources Defense Council, and other advocates around the country developed a utility consumer’s bill of rights, “*A Roadmap to Utility Service as a Human Right*,” which offers bedrock principles of universal, affordable water, energy, and broadband service.²³ (The roadmap is reproduced as an appendix at the end of this module.) There is also an accompanying implementation guide that can be found online.²⁴ The authors invite advocates to apply and adapt the roadmap to their own circumstances to promote federal, state, and local policy reforms.²⁵ This toolkit reflects the roadmap’s principles and recommendations.

UNAFFORDABLE WATER BILLS HARM PEOPLE, ESPECIALLY PEOPLE OF COLOR AND LOW-INCOME PEOPLE

Public water and sewer systems were developed in the United States, more than a century ago, primarily to protect public health by preventing the spread of infectious disease. They were created, in large part, through massive public investment made to realize those public health benefits.²⁶ Ironically, in the 21st-century United States, loss of water access due to a household’s inability to pay

puts individual and community health at risk. (See text box, “COVID-19 highlights the links between shutoffs and public health.”)

Unaffordable water and sewer bills can have severe consequences. When people cannot afford to pay, they often face disconnection of water service and liens on their property. These collection practices directly harm the health of individuals and communities, threaten access to housing (through foreclosure or eviction), and can even result in loss of parental custody of children.²⁷ There is no nationwide reporting on water shutoffs for nonpayment. But various studies have documented thousands or tens of thousands of shutoffs in individual cities around the country, in a given year.²⁸ Other studies have identified high levels of residential water debt in many cities.²⁹

There is evidence that people of color disproportionately experience water affordability challenges. A recent working paper analyzing data from more than 1,500 U.S. water utilities found that Black residents are more likely to have bills that may be considered unaffordable, as a share of household income, even after controlling for poverty rates.³⁰ Analyses of data in various cities have shown people of color experiencing water shutoffs at higher rates than others.³¹ Federal civil rights lawsuits have alleged racial disparities in water shutoffs and liens in

specific cities.³² These disparities are consistent with other findings regarding utility shutoffs more generally, for which nationwide data are available.³³

In some Black communities, water debts are a significant driver of property loss, leading to the destruction of generational wealth and feeding the racial wealth gap.³⁴ People of color also are more likely to lack access to basic water infrastructure, leading many to purchase expensive bottled water or spend large sums on gas to drive to access water for their daily needs.³⁵

To pay unaffordable water bills and avoid water shutoffs, families may alternate between paying energy bills and water bills, or they may cut spending on other essential expenses including housing, medicine, transportation, food, and school supplies.³⁶ Reduced spending on these other daily needs has its own adverse consequences for health, employment, and other social outcomes.

Rising water and sewer rates can also increase costs for residents who do not pay a water bill directly—such as most renters in multi-family buildings—by raising the cost of rental housing.³⁷ Those residents can also experience disconnection of water service when a landlord fails to pay the water bill.

Unaffordable water bills and the threat of disconnection also cause significant psychological distress.³⁸ People in desperate situations whose water service is disconnected can be criminally prosecuted for reconnecting service without the utility's permission.³⁹

Overdue or unpaid water bills can also spiral into greater household debt. Punitive late fees and interest charges can amplify the burden, turning small arrearages into massive ones. Overdue utility bills may show up on consumer credit reports, affecting credit scores and impacting people's ability to access financial services.⁴⁰

UNAFFORDABLE WATER BILLS ARE A LOSE-LOSE PROPOSITION FOR UTILITIES AND THEIR CUSTOMERS

Many utilities and regulators assume that when customers fail to pay their bills, the appropriate response is to use aggressive collection methods, such as shutoffs and liens, to coerce payment. When affordability is considered at all, it is often treated as a matter of charity rather than a core obligation to ensure universal access to essential public services.

In reality, though, the vast majority of customers who fail to pay their water bills do so because they cannot afford to.⁴⁵ Punitive approaches to the problem of nonpayment tend to exacerbate this problem, not solve it.

Increasingly, water and wastewater utilities are recognizing that, to generate the revenue they need to serve their communities, they must find ways to ensure that bills are affordable for those least able to pay.⁴⁶ For example, municipalities are often reluctant to raise rates because of concerns about costs to low-income customers; effective affordability or assistance programs can enable utilities to increase rates overall to generate needed revenue, while protecting people who can't afford higher water bills.⁴⁷

When a significant percentage of a water utility's customers are unable to pay their bills, the utility's finances suffer, to the detriment of everyone served by the system.⁴⁸ By increasing the rate of bill nonpayment, unaffordable bills also increase the utility's cost of collecting overdue amounts and the cost of conducting shutoffs—expenses that are passed on to all customers. Ultimately, unaffordable bills can threaten a utility's capacity to deliver safe and reliable water and sanitation service.⁴⁹ When low-income customers are billed an amount they can afford, however, they are much more likely to pay those bills, voluntarily and on time, providing a more stable, predictable revenue stream for the utility.

COVID-19 HIGHLIGHTS THE LINKS BETWEEN SHUTOFFS AND PUBLIC HEALTH

The COVID-19 pandemic has spotlighted the connections between access to water and public health, even as it has deepened existing challenges and inequalities related to water access. Guidance from the U.S. Centers for Disease Control and Prevention emphasizes the importance of frequent hand washing to prevent spread of the novel coronavirus.⁴¹ Access to water is also essential for bathing and personal hygiene, hydration, and home sanitation, all of which help to reduce the spread of disease at any time, not only during a pandemic.

The pandemic imperiled many households' ability to pay for water and other essential services. Black households and other households of color were hit especially hard, due in part to the staggering wealth gap between Black and white households and higher rates of job and housing insecurity.⁴²

In the early days of the pandemic, water advocates pushed governments to place moratoriums on water shutoffs in the interest of public health. Many cities and states did so. However, only 19 states plus Washington, D.C., and Puerto Rico adopted statewide moratoriums at any point during the pandemic, and many of those lasted only a few months.⁴³

A recent study from Cornell University researchers suggests that water shutoff moratoriums were effective at reducing infections and deaths during the pandemic. The study estimated that a nationwide water shutoff moratorium would have reduced COVID-19 cases by 3.97 percent and deaths by 5.51 percent in the 41 states without a moratorium during the study period—protecting more than 480,000 people from infection and more than 9,000 people from death.⁴⁴

ARE WATER BILLS AFFORDABLE? WHERE AND FOR WHOM?

Whether water bills are affordable can be considered at many different scales, ranging from the individual household to an entire community, region, state, or even nation.

Determining whether an individual household can afford its water or sewer bills on a regular basis requires selecting a threshold for what is considered to be affordable, often expressed as a percentage of household income. Some advocates cite a United Nations recommendation of 3 percent, for example.⁵⁰ Some low-income water affordability programs use a sliding scale, aiming to keep bills to a lower percentage of income for the lowest-income customers. For example, the two U.S. cities that offer percentage-of-income rates to low-income households use sliding scales with a range of 1 to 4 percent (for combined water and sewer costs).⁵¹ However, among community, utility, and other stakeholders across the country, there is no consensus threshold for household-level affordability.⁵²

A separate question is whether water bills (or water rates) are considered affordable relative to household incomes across a utility's service area or other geographic area.⁵³ Historically, utilities typically have measured affordability of their rates based on customers at the median household income. Today, however, there is a widespread recognition that rate-setting and related public policy decisions must consider affordability for low-income households in particular.⁵⁴ Many recent water affordability studies focus on low-income households.⁵⁵ Yet, analysts have varied widely in their choice of metrics, data sources, assumptions, and thresholds of affordability. These methodological choices significantly affect where, for whom, and to what extent bills are determined to be unaffordable.⁵⁶ Advocates may wish to work with academics or other experts to choose one or more methodologies appropriate for their city or state, in order to quantify affordability challenges, measure trends over time, and establish goals that can inform state and local policies.

UNDERSTANDING THE DRIVERS OF RISING WATER RATES

At the national level, decades of underinvestment—and the resulting need to rehabilitate, replace, and modernize aging water and wastewater infrastructure—are a primary driver of increasing water and sewer rates. Among the most substantial capital expenses water and sewer systems face are removing toxic lead service lines, enhancing water treatment to filter harmful chemicals in source water, eliminating sewage overflows, replacing ancient water mains and sewer lines, and making infrastructure more climate resilient in the face of more frequent and intense storms and flooding—all steps that are necessary to ensure safe, clean water for all.⁵⁷ These dynamics play out in communities across the country, with rate impacts

being higher in some places than in others depending on local circumstances. In some instances, a legacy of racial discrimination in provision of municipal water services contributes to present-day cost burdens.⁵⁸

The need for massive investment will continue to drive rates up around the country, even with the substantial new federal infrastructure funding provided in the 2021 Bipartisan Infrastructure Law. The federal government and states can help ameliorate some of those pressures by prioritizing funds for the most disadvantaged communities. Yet the hundreds of billions of dollars of needed investment far outstrip the current availability of federal and state funds.⁵⁹

At the individual utility level, water rates may be driven by a multitude of factors. Rates are significantly shaped by the cost to the utility of providing service, which is unique to each utility. The cost of providing service includes the cost of the infrastructure required to procure, treat, store, and deliver water—such as water intakes, pipes, valves, pumps, storage tanks, and meters—as well as operational expenses of the utility, ranging from chemicals to electricity to staff.⁶⁰ In water systems with deteriorating, leaky distribution systems, costs also include production of water that never reaches any customers—but that everyone ultimately pays for through rates.⁶¹ In cities with historical population declines, a smaller number of people than municipal systems were designed to serve must now bear the cost of maintaining and fixing aging infrastructure, intensifying upward pressure on rates.⁶²

Utilities often finance pipe replacements and other infrastructure projects by taking on debt or issuing bonds, which resurface in water rates as interest and other debt-related charges. Borrowing costs depend on the overall state of the utility's finances and can be a substantial portion of a utility's entire budget.⁶³ The cost to ratepayers of infrastructure investments will also be influenced by whether and to what extent the utility makes use of grants or low-cost loans available through state and federal government programs.⁶⁴

There are many other reasons that rates may vary among water providers, including, for example, the opportunity for larger systems to realize economies of scale relative to smaller systems, differing utility ownership structures, differences in water supply costs, and the extent to which utility revenues may be diverted to nonutility purposes.⁶⁵ As explored in detail in the Equitable Water Rates module, rates also vary (for any given level of water use) depending on policy choices that utilities make when designing their rate structures.⁶⁶ For local advocates interested in improving affordability, it is important to understand the most significant factors affecting a utility's rates.

COMPARING WATER RATES: RESOURCES AND CAUTIONARY NOTES

Comparing water rates across utilities can be tricky. Higher rates do not necessarily mean higher bills because typical water usage may differ from place to place—and bills are typically a function of both rates and usage. Likewise, simply comparing bills does not show whether affordability is a greater challenge in one community than in another, since affordability is a function of both bills and income levels across a community. Further, because the actual cost of providing water and sewer service may vary according to local conditions, higher rates or bills do not necessarily mean that a utility is “overcharging” its customers.

Still, wide variation in rates from place to place may reflect historical and current inequities in the provision, funding, and management of essential water services.

Several organizations publish compilations or offer online dashboards that can help you understand how your rates compare to those in other areas for a given level of water usage. The most widely-used free compilations and dashboards are listed below; be aware that they cover only certain states and may vary in how frequently they are updated.

- The University of North Carolina’s Environmental Finance Center compiles and publishes information on water and wastewater rates from thousands of systems in more than 20 states, extracted from annual surveys performed in each state by local agencies, consultants, trade associations, and nonprofits.⁶⁷
- The Nicholas Institute for Environmental Policy Solutions at Duke University published an online water affordability dashboard that covers 14 states and more than 3,000 utilities.⁶⁸
- Circle of Blue publishes an annual survey of water rates in 30 major U.S. cities.⁶⁹
- The Jersey WaterCheck website shows water rates of more than 100 water systems and several dozen wastewater systems in New Jersey, which can be searched by utility or compared across utilities.⁷⁰

THE FRAGMENTED OWNERSHIP AND OVERSIGHT OF WATER AND WASTEWATER UTILITIES PRESENT CHALLENGES TO ADVOCATES

The water and wastewater sector is highly fragmented and decentralized, with utilities operated primarily by local governments. For drinking water, there are approximately 50,000 community water systems in the United States. More than half of these are very small, serving populations of less than 500. At the opposite end of the spectrum, the largest 434 systems serve nearly half of the U.S. population. The overwhelming majority of people who receive drinking water from a utility (84 percent) are served by publicly owned utilities, with most of the rest served by investor-owned utilities.⁷¹

The wastewater sector is similar. It has somewhat fewer individual utilities, though they still number in the tens of thousands. Most wastewater utilities are small, with the majority of the population served by the largest ones. And the vast majority of wastewater customers are served by publicly owned systems, with investor-owned utilities serving an even smaller share than in the water sector.⁷²

These structural features make it especially challenging to address household-level affordability issues in the water and wastewater sector, as compared with more centralized and highly regulated sectors such as gas and electric utilities.⁷³ For example, the proliferation of small water utilities can make it harder to administer and fund robust affordability and assistance programs in the water sector, since smaller utilities have less administrative capacity and revenue to support such programs. The fragmented nature of the sector also makes it more difficult to coordinate and scale advocacy efforts.

In addition, the fact that water utilities are mostly publicly owned creates problems related to regulatory oversight. Investor-owned water and wastewater utilities, which operate as for-profit monopolies in their service areas, are almost always regulated by state utility commissions. These commissions have extensive public processes to review and approve rates, typically with the involvement of designated ratepayer advocates (although with varying results in terms of affordability). In addition, utility commissions typically have various consumer protection rules for all utilities they regulate, addressing such issues as minimum notice requirements for shutoffs, prohibitions on shutoffs for certain vulnerable customers (such as those with specific medical needs) or at certain times of year (such as winter heating season), fair billing practices, dispute resolution procedures, and more.⁷⁴

By contrast, publicly owned utilities—including most water and wastewater utilities—are typically not subject to state utility commission oversight of rates or consumer protections. These utilities set rates independently, subject to very general state law principles but with no state approval needed. Further, no state has a comprehensive, uniform set of consumer protection rules that apply to utilities that are not commission-regulated. Rules and policies on shutoffs, billing, and the like are also determined at the local level, where they vary extremely widely.⁷⁵ (See the module on Accountability and Participation in Decision Making for more discussion of how governance and oversight differ for investor-owned and publicly owned utilities.)

TOWARD A COMPREHENSIVE APPROACH TO WATER AFFORDABILITY

Whether customers can afford their bills, and what happens when they cannot pay, are two distinct but related questions. Water rates, water usage, the availability of affordability or assistance programs, household income, and cost of living largely determine a customer's ability to pay. But bill collection practices and consumer protection rules determine what happens when someone cannot. A comprehensive approach to water affordability must address both questions. This toolkit aims to do so while recognizing the deep and multifaceted challenges described above.

(As noted in the Introduction module, a holistic approach must also address topics beyond the scope of the toolkit—

for example, improving access to state and federal infrastructure funding and adopting practices that enable more efficient provision of safe, reliable water and sewer service.)

The modules in this toolkit offer a broad range of policies and tactics that can be applied at the local and state levels. These include targeted programs to reduce low-income customers' bills, more equitable rate structures, debt relief programs, consumer protection rules, governance reforms, and more. The many cross-references from one module to another underscore that these policies work best when they are implemented together as part of a holistic affordability strategy. It is our hope that the ideas and examples in this toolkit can help advocates around the country achieve their goals of ensuring affordable access to essential water and wastewater services for every household.


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Appendix

A UTILITY CUSTOMER'S BILL OF RIGHTS

In 2021 the authors of this toolkit and other advocates around the country developed a utility consumer's bill of rights—“A Roadmap to Utility Service as a Human Right”—that offers bedrock principles of universal, affordable water, energy, and broadband service. The roadmap is reproduced in full below, and an accompanying implementation guide can be found online.⁷⁶ The authors of the roadmap invite advocates to apply and adapt it to their own circumstances to promote federal, state, and local policy reforms.



Essential Utility Services During the COVID-19 Pandemic and Beyond: A Roadmap to Utility Service as a Human Right

March 2021

- Safe, reliable, and affordable energy utility service — including heat, cooling, and light — is an essential human need.
- Safe, reliable, and affordable water and sanitation are essential human needs.
- Reliable, robust, and affordable broadband internet service is an essential human need.
- No household should be disconnected from these essential utility services based on the inability to pay.
- State laws, including those that direct the actions of public utility commissions and municipalities, and cooperatives, should explicitly recognize that uninterrupted utility service is an essential human need and essential to public health and safety.
- Utility service should be affordable for all households. In practice, that requires targeted, effective utility affordability programs sufficient to meet the needs of economically distressed households (such as percentage of income payment plans and/or discount rates).
- Utility billing and collection practices should recognize that uninterrupted utility service is an essential human need. In practice, that requires affordable debt retirement programs and prohibits, at a minimum, the assessment of late payment and reconnection fees, deposits, liens, sale of debt to debt buyers, and other aggressive collection practices.
- Utilities should monitor for and report on disparities in impacts by race and ethnicity on billing, collection, and termination practices, and all services provided, and correct any identified disparities.
- Utilities should provide robust and targeted energy and water efficiency services for economically distressed households.

ENDNOTES

- 1 American Water Works Association (hereinafter AWWA), “AWWA’s 2019 Water and Wastewater Rate Survey Reveals Increasing Utility Costs Boosting Rates,” press release, May 9, 2019, <https://www.awwa.org/AWWA-Articles/awwas-2019-water-and-wastewater-rate-survey-reveals-increasing-utility-costs-boosting-rates>.
- 2 Joseph W. Kane and Lynn E. Broaddus, “Striking a Better Balance Between Water Investment and Affordability,” Brookings blog: *The Avenue*, September 12, 2016, <https://www.brookings.edu/blog/the-avenue/2016/09/12/striking-a-better-balance-between-water-investment-and-affordability/>.
- 3 Ibid.
- 4 Manuel P. Teodoro, “Water and Sewer Affordability in the United States,” *AWWA Water Science* 1, no. 2 (March 2019): 1-10, https://mannyteodoro.com/wp-content/uploads/Teodoro-2019-AWWA_Water_Science_Affordability_in_USA.pdf. The study, published in 2019, used water rate data from 2017 and income and demographic data from 2016.
- 5 For example, see Jennifer Read et al., *Water Service Affordability in Michigan: A Statewide Assessment*, University of Michigan Water Center, Graham Sustainability Institute, January 2022, <https://graham.umich.edu/project/MI-statewide-water-affordability-assessment>; Manuel P. Teodoro, *Water & Sewer Service Affordability in Ohio: Assessment & Opportunities for State Policy*, EJ Metrics, November 4, 2019, https://greatlakes.org/wp-content/uploads/2019/11/AGLOEC-Affordability-Final-Report_1Nov2019.pdf; Daniel J. Van Abs, Tim Evans, and Kimberley Irby, *A New Jersey Affordability Methodology and Assessment for Drinking Water and Sewer Utility Costs*, New Jersey Future, August 2021, <https://www.njwatercheck.com/Content/documents/Van%20Abs%202021.08%20NJ%20Affordability%20Assessment.pdf>.
- 6 Many examples are discussed throughout this toolkit, ranging from big cities like Detroit, Baltimore, and Chicago to small, rural communities like Martin County, Kentucky.
- 7 Sabrina Kozikis and Inga T. Winkler, “Between Confrontation and Cooperation: Right to Water Advocacy in the Courts, on the Streets, and at the Capitols in the United States,” *Water* 13 (December 2021): 1-18, <https://www.mdpi.com/2073-4441/13/24/3541/pdf>.
- 8 Manuel P. Teodoro, “Measuring Household Affordability for Water and Sewer Utilities,” *Journal AWWA* 110, no.1 (January 2018): 13-24, <https://mannyteodoro.com/wp-content/uploads/2014/03/Teodoro-JAWWA-2018-affordability-methology.pdf>.
- 9 United Nations, “The human right to water and sanitation,” accessed May 15, 2022, https://www.un.org/waterforlifedecade/human_right_to_water.shtml; United Nations General Assembly, Resolution No. 64/292, “The human right to water and sanitation,” July 28, 2010, <https://daccess-ods.un.org/access.nsf/Get?Open&DS=A/Res/64/292&Lang=E>.
- 10 Energy & Environmental Program of the Aspen Institute and the Nicholas Institute for Environmental Policy Solutions at Duke University, *Toward a National Water Affordability Strategy: Report from the Aspen-Nicholas Roundtable Series on Water Affordability*, January 2022, <https://www.aspeninstitute.org/wp-content/uploads/2022/03/WATER-Report-TXT-6X9-2022-Final2.pdf>. Participants from across the water sector—representing utilities, community-based organizations, clean water advocates, finance, academia, philanthropy, consulting, and regulatory agencies—signed on, in their individual capacities, to a set of principles and recommendations that emerged from a series of roundtable discussions. The first principle is “Access to safe, reliable, and affordable water services is a human right; therefore, no person should be denied access to essential water services based on the ability to pay.”
- 11 See Kozikis and Winkler, “Between Confrontation and Cooperation” (discussing how the use of human rights language in the Detroit water shutoff cases helped to humanize the water crisis).
- 12 United Nations Water, “Human Rights to Water and Sanitation,” accessed May 15, 2022, <https://www.unwater.org/water-facts/human-rights/>. The Northeastern University School of Law’s Program on Human Rights and the Global Economy has developed a series of resources on the human right to water, including a discussion of how these international law principles apply to domestic law in the United States. See Northeastern University School of Law, “Right to Water,” accessed May 15, 2022, <https://law.northeastern.edu/academics/centers/phrge/initiatives/right-to-water/>.
- 13 United Nations General Assembly, Resolution No. 64/292; United Nations, “The human right to water and sanitation.”
- 14 United Nations General Assembly, Resolution No. 70/169, “The human rights to safe drinking water and sanitation, December 17, 2015, <https://daccess-ods.un.org/access.nsf/Get?OpenAgent&DS=A/RES/70/169&Lang=E>.
- 15 Kozikis and Winkler, “Between Confrontation and Cooperation.”
- 16 Martha F. Davis, “Let Justice Roll Down: A Case Study of the Legal Infrastructure for Water Equality and Affordability,” *Georgetown Journal on Poverty Law & Policy* 23, (2016): 355, 373-74, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2814666.
- 17 Mass. Const. art. XCVII (“The people shall have the right to clean air and water”); PA Const. Art. I § 27 (“The people have a right to clean air [and] pure water”); NY Const. art. I, § 19 (“Each person shall have a right to clean air and water, and a healthful environment”).
- 18 Cal. AB 685 (2011-2012), codified at Cal. Water Code § 106.3 (West); International Human Rights Law Clinic, *The Human Right to Water Bill in California: An Implementation Framework for State Agencies*, University of California, Berkeley, School of Law, May 2013, [https://www.law.berkeley.edu/files/Water_Report_2013_Interactive_FINAL\(1\).pdf](https://www.law.berkeley.edu/files/Water_Report_2013_Interactive_FINAL(1).pdf).
- 19 Va. Gen. Assembly, HJR No. 538 (Spec. Sess. 2021), <https://lis.virginia.gov/cgi-bin/legp604.exe?212+ful+HJ538ER>.
- 20 Among other things, the Virginia resolution states that:
 - “Direct or indirect costs to connect, deliver, and provide water should not be a hindrance to the access of water, and the costs of access to water should not compromise the ability to pay for other essential items, such as food, housing, and health care, so that no one is deprived of water because of inability to pay;”
 - “A statewide water affordability program would ensure that every household can afford to pay its water, wastewater, and stormwater bills based on the household’s income through percentage of income payment plans with arrears management;”
 - “Water service disconnections for nonpayment are contrary to promoting public welfare and public health, and the Commonwealth must protect vulnerable populations, including seniors, youths, and medically compromised individuals, from water service disconnections.”
- 21 See Kozikis and Winkler, “Between Confrontation and Cooperation,” 10-12 (discussing other state legislative initiatives in Louisiana, Ohio, Minnesota, and Michigan).
- 22 Northeastern University School of Law, “Right to Water.”
- 23 National Consumer Law Center et al., “Essential Utility Services During the COVID-19 Pandemic and Beyond: A Roadmap to Utility Service as a Human Right,” March 2021, https://www.nclc.org/images/pdf/special_projects/covid-19/IB_Utility_Service_Principles.pdf.

- 24 National Consumer Law Center et al. “Implementing a Roadmap to Utility Service as a Human Right,” April 2021, https://www.nclc.org/images/pdf/special_projects/covid-19/IB_Utility_Bill_of_Rights.pdf.
- 25 Deron Lovaas, Larry Levine, and Karen Lusson, “A New Customer Bill of Rights: Affordable Utility Services,” NRDC *Expert* blog, May 3, 2021, <https://www.nrdc.org/experts/deron-lovaas/new-customer-bill-rights-affordable-utility-services>.
- 26 Coty Montag, *Water/Color: A Study of Race & the Water Affordability Crisis in America’s Cities*, Thurgood Marshall Institute at the NAACP Legal Defense and Educational Fund, April 2019, 7, https://www.naacpldf.org/wp-content/uploads/Water_Report_FULL_5_31_19_FINAL_OPT.pdf; Zoe Roller et al., *Closing the Water Access Gap in the United States: A National Action Plan*, Dig Deep and U.S. Water Alliance, 8, accessed May 13, 2022, http://uswateralliance.org/sites/uswateralliance.org/files/publications/Closing%20the%20Water%20Access%20in%20the%20United%20States_DIGITAL.pdf.
- 27 Patricia A. Jones and Amber Moulton, *The Invisible Crisis: Water Unaffordability in the United States*, Unitarian Universalist Service Committee, May 2016, 11–12, https://www.uusc.org/sites/default/files/the_invisible_crisis_web.pdf; National Consumer Law Center, *Review and Recommendations for Implementing Water and Wastewater Affordability Programs in the United States*, March 2014, <http://www.nclc.org/images/pdf/pr-reports/report-water-affordability.pdf>.
- 28 In one report, among the 73 utilities around the country from which data were obtained in 2016, the authors tallied nearly 570,000 residential shutoffs. Food & Water Watch, *America’s Secret Water Crisis: National Shutoff Survey Reveals Water Affordability Emergency Affecting Millions*, October 24, 2018, https://www.foodandwaterwatch.org/wp-content/uploads/2021/03/rpt_1810_watershutoffs-web2.pdf. In California alone, in 2018, researchers found that water utilities reported about 200,000 single-family households experienced a water shutoff. Laura Feinstein, Morgan Shimabuku, and Greg Pierce, “When Utilities Shut Off Water for the Poor, We Are All at Risk,” Pacific Institute blog, April 20, 2020, <https://pacinst.org/when-california-utilities-shut-off-water-for-the-poor-we-are-all-at-risk>. Detroit garnered international headlines—and the condemnation of United Nations human rights officials—when it engaged in mass shutoffs during and after the city’s bankruptcy. From 2014 to 2017, the city disconnected about 100,000 homes for nonpayment. Joel Kurth, “Detroit Shut Water to 1 in 10 Homes This Year. Yes, That’s Progress,” Michigan Radio, December 5, 2017, <https://www.michiganradio.org/families-community/2017-12-05/detroit-shut-water-to-1-in-10-homes-this-year-yes-thats-progress>. In 2019 Detroit disconnected water to 23,000 homes. Nina Lakhani, “Detroit Suspends Water Shutoffs Over Covid-19 Fears,” *The Guardian*, March, 12, 2020, <https://www.theguardian.com/us-news/2020/mar/12/detroit-water-shutoffs-unpaid-bills-coronavirus>. In January 2020, shortly before the COVID-19 pandemic spurred a moratorium on shutoffs, it was estimated that 9,500 households in Detroit lacked running water due to shutoffs for nonpayment. Joel Kurth, “Detroit Says No Proof Water Shutoffs Harm Health. Get Real, Experts Say,” *Bridge Michigan*, March 9, 2020, <https://www.bridgemi.com/michigan-health-watch/detroit-says-no-proof-water-shutoffs-harm-health-get-real-experts-say>. In Buffalo, from 2015 through March 2019, there were 17,000 instances of water being shut off for nonpayment. Nina Lakhani, “Millions in U.S. at Risk of Water Shutoffs Amid Layoffs Triggered by Pandemic,” *Consumer Reports*, updated July 10, 2020, <https://www.consumerreports.org/utilities/millions-in-us-at-risk-of-water-shutoffs-amid-layoffs-triggered-by-pandemic-a2187925013/>.
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- 31 Maria Zamudio and Will Craft, “So Close, Yet So Costly: In Cities on the Great Lakes, Water Pipes Are Crumbling and Poor People Are Paying the Price,” APM Reports, February 7, 2019, <https://www.apmreports.org/story/2019/02/07/great-lakes-water-shutoffs>; Montag, *Water/Color*; Kimberly Foltz-Diaz, Patrick Kelleher-Calnan, and Suren Moodliar, *The Color of Water: A Report on the Human Right to Water in the City of Boston*, Massachusetts Global Action, accessed May 13, 2022, http://massglobalaction.org/projects/colorofwater/primary_report_shutoffs_pre-pub.pdf.
- 32 ACLU Michigan, “Civil Rights Coalition Files Class Action Lawsuit Challenging Detroit Water Shutoff Policy,” press release, July 9, 2020, <https://www.aclumich.org/en/press-releases/civil-rights-coalition-files-class-action-lawsuit-challenging-detroit-water-shutoff>; NAACP Legal Defense Fund, “LDF Files Lawsuit Against the City of Cleveland to Address Discriminatory Water Liens and Shutoffs,” press release, December 18, 2019, <https://www.naacpldf.org/press-release/ldf-files-lawsuit-against-the-city-of-cleveland-to-address-discriminatory-water-liens-and-shutoffs/>.
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- 45 Darlene R. Wong et al., *Review and Recommendations for Implementing Water and Wastewater Affordability Programs in the United States*, National Consumer Law Center, March 2014, 10, <https://www.nclc.org/images/pdf/pr-reports/report-water-affordability.pdf> (discussing 1977 Senate report finding that “97 percent of all consumers pay all bills on time, every month, in a good economy”); John Cromwell et al., *Best Practices in Customer Payment Assistance Programs*, Water Research Foundation, January 2010, 35, https://aquadoc.typepad.com/files/water_affordability_4004.pdf (discussing studies from 2004, 2005, and 2007 finding that “most people want to pay their utility bills on time if it is at all possible for them to do so”).
- 46 For example, in October 2018, the largest national trade association for water utilities adopted its first-ever formal policy statement on affordability. It recognizes that low-income “affordability challenges can occur in any community, regardless of size, location, demographic makeup, and income distribution”; states that addressing these challenges is important to ensure that utilities are “financially sustainable”; and “strongly recommends the adoption of policies and procedures by utilities, regulators, and governmental entities to address the affordability challenges experienced by some of their residential customers.” AWWA, “AWWA Policy Statement on Affordability,” October 24, 2018, <https://www.awwa.org/Policy-Advocacy/AWWA-Policy-Statements/Affordability>.
- 47 As noted by EPA’s Environmental Financial Advisory Board, “Significant numbers of household-level affordability problems create a political climate where it is impossible for utilities to achieve or maintain full-cost rates. This, in turn, leads to deferrals of maintenance, upgrading, and replacement, as well as a lower standard of operation.” Environmental Financial Advisory Board letter to EPA Administrator Stephen L. Johnson, February 22, 2006, <https://nepis.epa.gov/Exe/ZyPDF.cgi/90060J00.PDF?DockKey=90060J00.PDF>.
- 48 As noted by EPA’s Environmental Financial Advisory Board, “Household-level affordability problems often result in increased costs and decreased revenues for water and wastewater utilities, impacting all customers, rich and poor alike.” Environmental Financial Advisory Board letter to US EPA Administrator Stephen L. Johnson.
- 49 Roger D. Colton, *Baltimore’s Conundrum: Charging for Water/Wastewater Services That Community Residents Cannot Afford to Pay*, Food & Water Watch, November 2018, <https://www.foodandwaterwatch.org/wp-content/uploads/2022/02/BaltimoreWater-RogerColton.pdf>; Mary Cromer and Ricki Draper, *Drinking Water Affordability Crisis: Martin County, Kentucky*, Appalachian Citizens’ Law Center & Martin County Concerned Citizens, accessed May 15, 2022, <https://aclc.org/wp-content/uploads/2020/08/Drinking-Water-Affordability-Crisis-Martin-County-Kentucky-1.pdf>.
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- 53 The geographic scopes considered in various studies include the entire United States, individual states, municipalities, utility service areas, and census tracts or other census-defined geographic units.
- 54 Teodoro, “Water and Sewer Affordability in the United States.” Czerwinski et al., *Developing a New Framework*.
- 55 For example, see Teodoro, “Water and Sewer Affordability in the United States”; Jennifer Read et al., *Water Service Affordability in Michigan*; Teodoro, *Water & Sewer Service Affordability in Ohio*; Daniel J. Van Abs, Tim Evans, and Kimberley Irby, *A New Jersey Affordability Methodology*.
- 56 For example, these analyses may be based on water bills as a percentage of household income, disposable household income (which takes into account variations in local cost of living), or some other metric. Many studies assess the affordability of a hypothetical bill on the basis of a utility’s rates and an assumed level of household usage; in these studies, the results depend in large part on assumptions about household size, per capita water use, and the type of usage measured (e.g., total indoor and outdoor water use versus essential indoor water use). Many studies assess affordability for a hypothetical household at a particular level of income; in that case, the answer will depend in large part on whose income is considered (e.g., median-income households or low-income households). Other studies examine what percentage of households within a certain geographic area face water costs that exceed a certain threshold, considering the full income distribution of the area; often, however, they do not distinguish between households that actually pay a water bill and those that pay only indirectly through rent, nor do they account for ways in which rent regulation or rental assistance programs may limit the extent to which landlords are able to pass on water costs to renters. Some studies rely on water costs and incomes reported by individual households in U.S. Census data, rather than assumed costs for households at a particular income level; this approach, too, has its limitations inherent in the available, self-reported water bill data. Many studies use data on water rates or bills specific to individual communities, but some have attempted to make broad generalizations about affordability based on some notion of “typical” water costs across the country, despite the fact that local water rates vary tremendously. Regardless of the methodology or metrics used, if a study intends to determine whether water costs in a given area are “affordable,” some threshold must be selected, and this, too, can vary widely. Some of these many methodological challenges are discussed in Teodoro, “Water and Sewer Affordability in the United States.”
- 57 For a discussion of challenges related to aging water distribution infrastructure, see Chi Ho Sham et al., *Drinking Water Guide: A Resource for Advocates*, River Network, 2019, https://www.rivernetwork.org/wp-content/uploads/2019/04/drinking_water_guide.pdf.
- 58 Montag, *Water/Color*, 7.
- 59 Elena H. Humphreys and Jonathan L. Ramseur, *Infrastructure Investment and Jobs Act (IIJA): Drinking Water and Wastewater Infrastructure*, Congressional Research Service, January 4, 2022, <https://crsreports.congress.gov/product/pdf/R/R46892>; Elena H. Humphreys and Jonathan L. Ramseur, “U.S. Environmental Protection Agency (EPA) Water Infrastructure Programs and FY2021 Appropriations,” Congressional Research Service, January 11, 2021, <https://crsreports.congress.gov/product/pdf/IF/IF11724>; EPA, “Bipartisan Infrastructure Law: A Historic Investment in Water,” accessed May 16, 2022, www.epa.gov/system/files/documents/2021-11/e-ow-bid-fact-sheet-final.508.pdf.

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- 61 Water industry best practices recognize that investments to prevent leaks from distribution systems can result in net savings and/or avoided costs for the utility and its customers. Ed Osann, “Water Loss Performance Standards: Where Should the States Be Headed?” NRDC *Expert* blog, January 15, 2016, <https://www.nrdc.org/experts/ed-osann/water-loss-performance-standards-where-should-states-be-headed>; AWWA, “The State of Water Loss Control in Drinking Water Utilities,” white paper, 2016, <https://www.awwa.org/Portals/0/AWWA/ETS/Resources/WLCWhitePaper.pdf?ver=2017-09-11-153507-487>.
- 62 U.S. Government Accountability Office (hereinafter GAO), *Water Infrastructure: Information on Selected Midsize and Large Cities With Declining Populations*, Report to the Ranking Member, Subcommittee on Environment and the Economy, Committee on Energy and Commerce, House of Representatives, GAO-16-785, September 2016, <https://www.gao.gov/assets/gao-16-785.pdf>.
- 63 For example, an analysis by utility affordability expert Roger Colton concluded that debt incurred by the City of Baltimore to finance water and wastewater infrastructure investments “generates not merely a *noticeable* impact on annual expenses to be included in customer rates, but a *substantial* impact.” Roger D. Colton, *Baltimore’s Conundrum: Charging for Water/Wastewater Services That Community Residents Cannot Afford to Pay*, Food & Water Watch, November 2018, ES-3, <https://www.foodandwaterwatch.org/wp-content/uploads/2022/02/BaltimoreWater-RogerColton.pdf> (emphasis in original).
- 64 Both publicly owned and privately owned utilities vary significantly in their use of federal water infrastructure funding and financing assistance. GAO, *Private Water Utilities: Actions Needed to Enhance Ownership Data*, Report to the Honorable Charles E. Schumer, Majority Leader, U.S. Senate, GAO-21-291, March 2021, 41–45, <https://www.gao.gov/assets/gao-21-291.pdf>.
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