

Water Efficiency and Plumbing Repair Assistance

Nearly everywhere, the more water you use, the more you pay on your water bill.¹ Anything that helps improve water use efficiency (that is, conserve water) in the home can reduce water bills. It can also reduce wastewater bills if you live in a community where sewer fees are based on the amount of water you use.²

Products that save water are widely available, and the replacement of inefficient plumbing and appliances with today's efficient products can provide enduring savings. For example, taking just one action—replacing an old toilet with an efficient new one—can save a family of four about \$100 per year in Milwaukee, \$300 per year in Los Angeles, and more than \$400 per year in Atlanta.³ Replacing showerheads, faucets, and clothes washers would save even more.

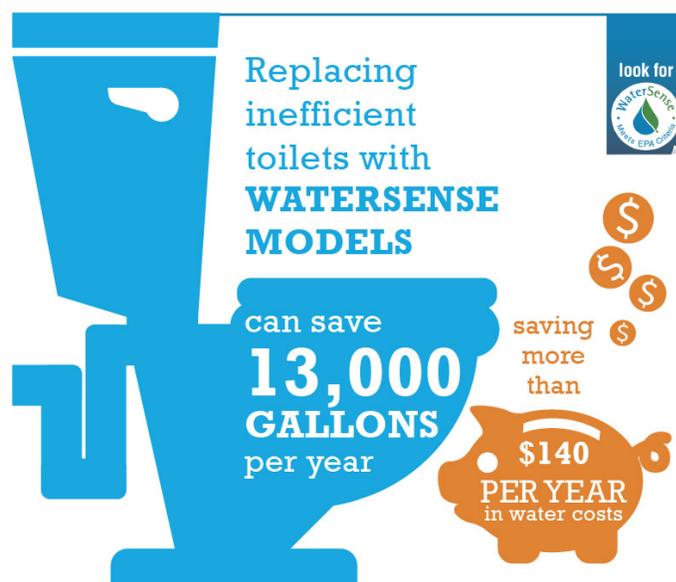
Low-income households are often in the most need of help with replacing outdated plumbing fixtures and repairing leaks. But they are also the least likely to receive it. Even where programs exist to help residents upgrade to water-efficient products, they typically fail to reach low-income households.

Limited access to water efficiency assistance not only keeps low-income households from reducing their bills. In the long run, it can actually drive *increases* in their bills. As higher-income households reduce their per capita water use, low-income households can be left to bear a greater share of the cost of operating a community's water system.

For all of these reasons, a comprehensive approach to water affordability must include water efficiency and plumbing repair assistance designed to reach low-income households.

SOLUTIONS AND TOOLS EXPLORED IN THIS MODULE:

- Reducing water bills through “direct install” programs that upgrade plumbing fixtures and repair leaks
- Targeting programs effectively to reach low-income households that can benefit the most
- Integrating water efficiency assistance into low-income energy efficiency programs
- Seeking opportunities to reach multi-family housing
- Offering plumbing repair assistance as needed to ensure safe restoration of service following a shutoff



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QUESTIONS TO CONSIDER:

As you develop a water affordability advocacy plan, answering the following questions may help you identify opportunities for new or improved water efficiency assistance programs.

- Do your water and/or sewer utility bills include a charge based on how much water is used? In other words, if customers use less water, will their bills go down?
- Does your utility offer help replacing old fixtures and appliances with new ones that use less water? If so, is this assistance in the form of a rebate or voucher? Or is it a direct installation paid by the utility?
- Does your utility offer programs to help with leak detection and/or plumbing repairs? If so, what assistance is offered?
- Are your utility's programs focused specifically on reaching low-income households? Is the utility successful at reaching low-income households?
- Does your utility track customer water usage in ways that can help prioritize customers for assistance? If not, could it do so with current metering and billing systems, or would future upgrades to those systems be needed?
- Do energy efficiency programs in your area offer improvements that reduce water use? Could they do more?

LOW-INCOME HOUSEHOLDS ARE MORE LIKELY TO HAVE INEFFICIENT PLUMBING, AND LESS LIKELY TO BE ABLE TO RETROFIT

Since the mid-1990s, state and federal water efficiency standards have required new household plumbing products to use much less water.⁴ And over the last 10 years, many states have adopted standards for new plumbing that are even more water-efficient than the federal minimums, which have remained unchanged since 1994.

Low-income residents disproportionately live in older, unrenovated housing stock, which is more likely to have outdated, inefficient fixtures still in use. Toilets account for nearly 30 percent of an average home's indoor water use, and older toilets can use about five times as much water as newer ones.⁵ Other old fixtures and appliances also use more water to get the job done. Further, older houses are more likely to have leaky pipes, which can lose huge amounts of water over time.⁶

The widespread availability of water-efficient fixtures and appliances, and, in some cases, state and national standards for these products, have reduced per capita indoor water use nationally by 15 percent during the last two decades.⁷ These reductions have been largely in newer housing and in other homes where residents have disposable income to spend on new toilets and appliances and repair of plumbing leaks.

Without effective assistance programs, low-income households cannot afford water efficiency improvements that would reduce their water bills, just as they are often unable to afford home energy efficiency improvements that would reduce their energy bills.

In the energy sector, long-standing federal programs—including the Weatherization Assistance Program (WAP) and Low Income Home Energy Assistance Program (LIHEAP)—provide billions of dollars' worth of home upgrades aimed specifically at making energy bills more affordable for low-income households. Many state and local energy efficiency programs similarly include components focused on low-income customers.

Energy efficiency programs sometimes provide water savings as well. But there are no federal or state programs specifically designed to help low-income households retrofit their homes to be more water efficient.⁸

In the limited number of places where *local* water efficiency assistance programs exist, they rarely focus on low-income households specifically. As a practical matter, these programs are often inaccessible to low-income households because of the way they are designed. For example, a common approach is to offer rebates to customers who purchase a water-efficient toilet to replace their old one. But low-income households may lack the resources to buy first and get reimbursed later—or to buy at all, even at a discounted price.

Where they exist, water assistance programs are often inaccessible to the low-income households most in need of bill savings.

No-cost “direct install” programs offer the best opportunity for low-income households to access water efficiency assistance.

UTILITIES SHOULD NOT CHARGE RESIDENTS TO REPLACE DANGEROUS LEAD SERVICE LINES

When people cannot afford expensive plumbing repairs or upgrades, the result can be more than just high water bills. It can also leave people with contaminated drinking water from lead pipes.

Water service lines connecting homes to the water mains under the street are a critical part of the water utility’s infrastructure. As many as 12 million of these service lines—and possibly more—carrying drinking water to the homes of up to 22 million more people in the United States, contain lead. These pipes can leach toxic contamination into drinking water as it flows to the tap.⁹

While efforts are underway around the country to replace these lead service lines, many water utilities are charging residents for replacing the portion of the line under private property and skipping over their homes—or completing dangerous partial replacements—if they are unable to pay. The cost can be several thousand dollars, putting lead pipe replacement out of reach for low-income homeowners and leaving them at continued risk of drinking contaminated water.¹⁰ Moreover, when utilities replace only the section of pipe running from the curb to the water main because a homeowner can’t afford to pay for the rest, this can actually increase the amount of lead in water at the tap.¹¹ A federal civil rights complaint is pending against one city that has continued to charge customers for replacing the portion of the lead service line running from the curb to the home.¹²

To ensure that no one is asked to bear a cost that he or she cannot afford for safe water, advocate for your utility to fund full lead service line replacement from the water main to the home, just as it would pay for any other water infrastructure improvement. In other words, the costs of a system-wide lead service removal program should be spread across the entire customer base. This is the case in Michigan, where all water utilities must replace all lead service lines within 20 years and cover the full cost of replacement.¹³

State and federal funds should be used to the greatest extent possible to reduce the costs borne by the utility’s customers as a whole. Notably, the Bipartisan Infrastructure Law passed in 2021 provides \$15 billion for lead service line replacement, to be disbursed as grants and loans to local water systems.¹⁴ Utilities using these funds must replace the entire lead service line, including the portion running under a homeowner’s property, at no cost to the homeowner.¹⁵ The U.S. Environmental Protection Agency (EPA) also encourages states to supplement this support with American Rescue Plan funds.¹⁶

TARGETED WATER EFFICIENCY ASSISTANCE CAN HELP REDUCE BILLS

In short, low-income households need access to no-cost or low-cost water efficiency retrofits—especially through “direct install” programs—as well as leak detection and repair.

Advocates should start by considering whether any existing water efficiency or plumbing repair programs offered by their local utility can be improved to include or prioritize low-income households. Many utilities already have programs to help residents reduce water usage. Although this is most common in the western and southeastern United States, where limited water supplies drive utilities to invest in water efficiency programs, utilities elsewhere may have programs too. Even some wastewater utilities have water conservation programs, since reducing household water use helps manage flow into overburdened sewage systems.

In places where there are currently no water efficiency programs, advocates can seek to create programs specifically for low-income households as part of an overall water affordability strategy. As with low-income affordability and assistance programs generally, programs could be established not only at the local level but at the state level as well. Advocates can also push for existing *energy* efficiency programs—which exist nearly everywhere—to offer more help with water efficiency.

Many useful lessons for program design can be drawn from a set of case studies recently published by the EPA.¹⁷ Other lessons can be drawn from the experience of contributors to this toolkit and from the Water Now Alliance, which has published several additional case studies.¹⁸ For example:

- **Establish Income Eligibility Criteria:** Few existing water efficiency assistance programs are geared specifically toward low-income households. To develop programs specifically with these households in mind, appropriate income eligibility criteria are needed. These can match eligibility criteria for other water bill affordability or water assistance programs, where they exist. Alternatively, such criteria could be borrowed or adapted from other low-income programs, including energy bill and energy efficiency assistance programs as well as other offerings (for example, the Supplemental Nutrition Assistance Program) to limit paperwork burdens on applicants. In the Affordability

and Assistance Programs module, Appendix A includes additional best practices on eligibility and enrollment in low-income water affordability and assistance programs. (Also regarding eligibility, programs should avoid requiring the participating customer to have name-on-deed property ownership. Some advocates report that these requirements have unnecessarily made programs inaccessible to customers with tangled title—a situation that can happen, for instance, when a person has lawfully inherited a family home but his or her name was never put on the deed.)

- **Prioritize direct installation rather than rebates:**

Programs that provide direct installation of new fixtures and appliances with no upfront cost to the customer offer the best opportunity for low-income households to participate. Unfortunately, the most common model for water efficiency programs to date has been to offer a partial reimbursement for the cost of water-efficient products such as toilets. But this effectively excludes low-income households that lack discretionary income to make a purchase (and wait for a partial rebate) or cannot afford even the discounted price.

- **Improve outreach:** The best-intentioned program won't succeed if it is not effectively marketed to the target audience. In addition to basic steps like advertising through bill inserts, approaches can include partnering with other organizations and programs that serve low-income populations, prioritizing neighborhoods with older housing stock for outreach, focusing on vulnerable or disadvantaged communities within the utility's service area, and doing outreach to landlords when tenants may qualify but landlord approval is needed to participate.

- **Engage with those who will benefit the most:**

Encourage households to examine their water bills or bring them in to trusted organizations for review. A few simple calculations should be able to determine the amount of water used per person per day. Looking at bills from the winter months will be the best indicator of indoor water use. If the average daily indoor water use is consistently above 60 gallons per person per day, that household is likely to have very good opportunities for water savings and bill reduction. Those below this level may still have worthwhile savings opportunities, and of course those with higher billed usage are likely to save even more.

- **Identify possible leaks based on metering, billing, and on-site audits:** Utilities can flag accounts that have unusual spikes in metered usage, either on a regular billing cycle or, where remote meter reading exists, in something closer to real time. On-site water efficiency and leak detection audits could also be offered in conjunction with other site visits (e.g., visits for meter replacement or in connection with free home energy efficiency audits offered by WAP or by a local energy utility).

- **Integrate water efficiency assistance into other water affordability or assistance programs:** Other portions of this toolkit explore various types of water affordability and water assistance programs specifically intended for low-income households. Water efficiency assistance should be integrated into those programs as part of a holistic approach to reducing water bills, just as energy efficiency is often part of a low-income energy assistance program. In some cases, water efficiency assistance can be critical to the success of other affordability strategies; for example, it can help customers keep their water usage below the level that qualifies for a low lifeline rate. (See the Equitable Water Rates module for a discussion of lifeline rates.)

- **Piggyback on existing energy efficiency programs:** Low-income energy efficiency programs, such as WAP and local programs sponsored by an energy utility, can fund home improvements that reduce both energy and water usage. For example, efficient showerheads, faucet aerators, and clothes washers and insulation of hot water pipes reduce the amount of hot water used and the energy needed to heat it. Advocates can urge the entities that manage energy assistance programs to maximize the availability of water efficiency assistance in their offerings. Further, water and wastewater utilities can be encouraged to partner with those existing energy programs to administer new water efficiency programs, with funding from the water utility. (Keep in mind that, although energy programs are typically administered locally, they often rely on federal or state funds and on fees collected from energy customers, with program rules set by the state. So the targets for advocacy may include state agencies or legislatures that control energy program rules and offerings, as well as local water and energy utilities and energy assistance providers.)

- **Look for opportunities in multifamily housing:** Although renters in multifamily housing often are not the direct customers of a water utility, a landlord's water bill, like other operating costs, may nonetheless contribute to the cost of rent. Several pilot programs and other research suggest that there are opportunities for significant water efficiency gains, and associated savings, in multifamily residential buildings.¹⁹ The EPA's recent case study report includes several examples of local water efficiency and leak detection programs focused on multifamily buildings.²⁰

- **Provide assistance with plumbing repairs as needed to ensure safe restoration of service following a water shutoff:** Plumbing repairs may be necessary to safely restore service after a household has experienced shutoff for nonpayment.²¹ Just as programs should be available to help households that cannot afford their bills maintain service, plumbing repair assistance should be available to help those same households safely restore service following a shutoff.

CAUTION: UTILITY-SPONSORED WARRANTY PROGRAMS MAY NOT BE WORTH THE MONEY

In many cities, residential customers receive offers to purchase water and sewer line warranties—insurance against breakage of the pipes connecting the home to the public water or sewer system. These warranties are offered by private companies but often marketed in partnership with local utilities that take a portion of the premiums. According to the independent, nonprofit Consumers' Checkbook, these warranties are typically a bad deal for consumers, as compared to the benefits of the warranty. Consumers' Checkbook found that the more than seven million water customers who purchase these warranties pay \$4 to \$13 per month on top of their ordinary water or sewer bill.²²

KEY RESOURCES:

WaterSense, *Assistance That Saves: How WaterSense Partners Incorporate Water Efficiency Into Affordability Programs*, U.S. Environmental Protection Agency, July 2021, <https://www.epa.gov/system/files/documents/2021-07/ws-assistance-that-saves-efficiency-and-affordability.pdf>.

This report provides case studies of water efficiency assistance programs focused on low-income households, along with lessons learned and recommendations.

ENDNOTES

- 1 Most drinking water utilities have meters that record the volume of water used by customers and collect revenue through rates that are based at least in part on the volume of water used. Utilities that have not installed meters may instead base water bills on flat charges that do not vary by use. Households on private wells also do not receive a volumetric water bill, though their water use may influence the cost of electricity used for pumping.
- 2 Most households receiving sewer service are billed in part on the basis of the volume of water recorded by the water meter. However, it is quite common for water service and sewer service to be provided by different utilities; in such cases the sewer utility may base its charge on the assumed use of an average household (an “equivalent household unit”) and charge all residences the same regardless of actual water use. And of course, homes on septic tanks rather than public sewers do not receive a sewer utility bill.
- 3 A typical toilet installed in the 1980s uses about 3.5 gallons per flush, while a modern, high-performance toilet uses 1.1 gallons per flush. Assuming 20 flushes per day in a five-person household, a new toilet would save 1,440 gallons per month. Based on local water and sewer rates in three sample cities, toilet replacement would reduce the monthly bill by about \$8 in Milwaukee, \$25 in Los Angeles, and \$36 in Atlanta. Current per-gallon rates for typical levels of residential water usage were taken from the following sources: Milwaukee Water Works, “Milwaukee Municipal Services Bill Charges,” City of Milwaukee, accessed May 14, 2022, https://city.milwaukee.gov/ImageLibrary/Groups/WaterWorks/Customer-Service/MilwaukeeMuniSvcBillEnglish_1.19.22.pdf; Los Angeles Department of Water and Power, “Water Rates,” accessed May 14, 2022, https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-fr-schedul-a-res; LA Sanitation, “Sewer Service Charge,” City of Los Angeles, accessed May 14, 2022, <https://www.lacitysan.org/san/faces/home/portal/s-lsh-au/s-lsh-au-r/s-lsh-au-r-b/s-lsh-au-r-b-ss; Department of Watershed Management, “Water and Sewer Bill Rates,” City of Atlanta, accessed May 14, 2022, https://drive.google.com/file/d/1KdbWluTS5iHjwtp4Vr3dYGvyv4v7DTTm/view>.
- 4 Mikelann Scerbo, “Congress Set Toilet Standards In 1992. Here’s The Data Showing They’re Saving Water And Energy,” Alliance to Save Energy blog: *Let’s Save Energy*, Dec. 11, 2019, <https://www.ase.org/blog/congress-set-toilet-standards-1992-heres-data-showing-theyre-saving-water-and-energy>.
- 5 WaterSense, “Residential Toilets,” U.S. Environmental Protection Agency (hereinafter EPA), accessed May 14, 2022, <https://www.epa.gov/watersense/residential-toilets>.
- 6 Department of Watershed Management, “How to Request an Account Adjustment,” City of Atlanta, accessed April 18, 2022, <https://www.atlantawatershed.org/account-review-request/>. See the section titled “What Are Leaks?” which describes different kinds of leaks and the leak rate.
- 7 William B. DeOreo et al., *Residential End Uses of Water, Version 2*, Water Research Foundation, April 2016, https://www.circleofblue.org/wp-content/uploads/2016/04/WRF_REU2016.pdf. Indoor residential water use declined between 1999 and 2016 by 15 percent on a per capita basis and by 22 percent on a per household basis.
- 8 The Bipartisan Infrastructure Law, passed by Congress in 2021, directed the EPA to establish a pilot grant program to support local low-income assistance programs. The law identifies water efficiency assistance as an eligible use of funds under the pilot. However, the pilot is currently not funded or operational. Pub. Law No. 117-58, § 50109, 135 Stat. 1148 (2021), <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>.
- 9 NRDC, “Lead Pipes Are Widespread and Used in Every State,” accessed April 18, 2022, <https://www.nrdc.org/lead-pipes-widespread-used-every-state>.
- 10 Tom Neltner, “An Environmental Justice Case Study: How Lead Pipe Replacement Programs Favor Wealthier Residents,” Environmental Defense Fund *EDF Health* blog, January 4, 2022, <http://blogs.edf.org/health/2022/01/04/an-environmental-justice-case-study-how-lead-pipe-replacement-programs-favor-wealthier-residents/>.
- 11 EPA Science Advisory Board, *SAB Evaluation of the Effectiveness of Partial Lead Service Line Replacements*, September 28, 2011, https://www.epa.gov/sites/default/files/2015-09/documents/sab_evaluation_partial_lead_service_lines_epa-sab-11-015.pdf.
- 12 Jennifer Ortega, “Civil Rights Complaint Draws Attention to the Discriminatory Impacts of Common Lead Pipe Replacement Practice,” Environmental Defense Fund *EDF Health* blog, January 7, 2022, <https://blogs.edf.org/health/2022/01/07/civil-rights-complaint-draws-attention-to-the-discriminatory-impacts-of-common-lead-pipe-replacement-practice/>. The complaint alleges that the practice has a disproportionate impact on Black, Latino, and Native American residents.
- 13 Cyndi Roper, “Michigan Moves to Eliminate Lead Drinking Water Pipes,” NRDC *Expert* blog, June 14, 2018, <https://www.nrdc.org/experts/cyndi-roper/michigan-moves-eliminate-lead-drinking-water-pipes>.
- 14 EPA, “Bipartisan Infrastructure Law: Water Infrastructure Investments,” accessed April 18, 2022, <https://www.epa.gov/infrastructure/water-infrastructure-investments>.
- 15 Radhika Fox, assistant administrator, EPA, to EPA Regional Water Division Directors and State SRF Program Managers, “Implementation of the Clean Water and Drinking Water State Revolving Fund Provisions of the Bipartisan Infrastructure Law,” memorandum, March 8, 2022, https://www.epa.gov/system/files/documents/2022-03/combined_srf-implementation-memo_final_03.2022.pdf.
- 16 EPA “Sample Letter” to governors, December 2, 2021, <https://www.epa.gov/system/files/documents/2021-12/governors-bil-letter-final-508.pdf>.
- 17 WaterSense, *Assistance That Saves: How WaterSense Partners Incorporate Water Efficiency Into Affordability Programs*, EPA, July 2021, <https://www.epa.gov/system/files/documents/2021-07/ws-assistance-that-saves-efficiency-and-affordability.pdf>.
- 18 WaterNow Alliance, “’17 Project Accelerator: Cheyenne, WY, Income-Qualified Direct Install Program Development and Support,” accessed April 18, 2022, <https://waternow.org/project/2018-project-accelerator-winner-cheyenne-board-of-public-utilities-wy/>; WaterNow Alliance, “Fall ’20 Project Accelerator: Evans, CO, Direct Install Program for Income-Qualified Residents and Indoor Water Efficiency Audits,” accessed April 18, 2022, <https://waternow.org/project/fall-20-project-accelerator-evans-co/>; Tap Into Resilience, “Case Studies: Aurora Water,” accessed April 18, 2022, <https://tapin.waternow.org/resources/aurora-water/>.
- 19 A 2018 report based on a pilot program in Chicago found that water efficiency improvements in multifamily affordable housing could reduce water and sewer charges by about 22 percent. Elevate Energy and Enterprise Community Partners, *Sustainable by Design: Increasing Water Efficiency and Reducing Cost in Affordable Housing*, April 2018, https://assets.ctfassets.net/ntcn17sslow9/4vVwHfW4pdVJydB8TuBV3X/f8f83d995565c23d20071983640edeb1/enterprise_case_study_of_water_efficiency_pilot.pdf. In Southern California, a pilot to fix leaky toilets in nonprofit-owned, low-income multifamily housing found that 47 percent of toilet water use in participating buildings was due to leaks. By using leak sensors on toilets, the program reduced leakage to 4.4 percent. California Water Action Collaborative, “Advancing Water Efficiency Through Leak Detection for Low-Income Housing in Southern California: 2021 Summary,” accessed April 18, 2022, https://wateractionhub.org/media/files/2022/03/08/Water_Efficiency_in_Low_Income_Housing_2021_Results.pdf. A 2015 report by academic researchers in Florida found that water efficiency improvements in multifamily housing units can result in household water use reductions of 57–66 percent and savings of \$346–400 in annual water and wastewater costs for customers of the particular utility studied. University of Florida and University of Central Florida, *Florida Multifamily Efficiency Opportunities Study*, January 9, 2015, https://www.fdacs.gov/content/download/60388/file/MFEOpportunities_%20FinalReport_1-9-15.pdf. A 2008 report by the U.S. Government Accountability Office reported that water efficiency retrofits are a major savings opportunity for local public housing authorities. U.S. Government Accountability Office, *Green Affordable Housing: HUD Has Made Progress in Promoting Green Building, but Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants*, GAO-09-46, October 2008, 14–15, <https://www.gao.gov/assets/290/282596.pdf>.

- 20 WaterSense, *Assistance That Saves*.
- 21 This issue came to the fore in some cities at the start of the COVID-19 pandemic, when utilities restored service to households that had been disconnected for nonpayment. Garret Ellison, “Damaged Plumbing Delays Detroit Water Restarts During Coronavirus Outbreak, Activists Warn,” Michigan Live, March 20, 2020, <https://www.mlive.com/coronavirus/2020/03/damaged-plumbing-hampers-detroit-water-restarts-during-coronavirus-pandemic-activists-warn.html>.
- 22 Jeff Blyskal, “Warranty Companies and Their Public Utility Partners Pitch Nightmare Scenarios. But These Programs Stink,” Consumers’ Checkbook, accessed April 19, 2022, <https://www.checkbook.org/delaware-valley-area/water-and-sewer-line-warranties/>.