

7.7 Plumbing Assistance Programs for Economically Disadvantaged Customers

Applicability

Plumbing assistance programs offer two types of savings: water conservation for utilities and reduced bills for customers. A utility may elect to establish a plumbing assistance program in order to achieve either or both types of savings. Although the savings goals may impact decision making in developing the program, the first, and most critical step, is ensuring there is actually an economically disadvantaged customer group significant enough to be engaged and to support the program. *Without this target customer base, the program will not be successful.* For example, The San Antonio Water System has successfully operated a plumbing assistance program for twenty years because at least 20 percent of San Antonio’s population is at federal poverty levels¹. Having a plumbing assistance program aimed at economically disadvantaged customers saves water and helps mitigate concerns about the impact of water and sewer rate increases.

The Customer Characterization BMP may assist a utility in assessing if this BMP if it is determined that the single-family customer base includes a significant number of economically disadvantaged households that will meet federal poverty guidelines.

Description

The Plumbing Assistance Programs for Economically Disadvantaged Customers BMP is focused on making plumbing repairs in single-family homes owned by economically disadvantaged customers. Utilities and socio-economists have both observed that economically disadvantaged homeowners are less likely to make water-saving repairs due to the cost, and that some repairs may be altogether cost prohibitive for economically disadvantaged customers.²

Additionally, it is often the case that customers incurring high water bills because of major leaks have difficulty not only in paying for the higher water bills, but also in paying for the cost of the repair. By making the necessary repairs, customers may experience lower, more manageable bills and become more reliable customers with respect to paying their bills.

This BMP is premised on the idea that by making plumbing improvements and repairs to potable water leaks in a home that might otherwise go without, customers are assisted in reducing their

¹ San Antonio, United States Census Bureau, (Oct. 14, 2015), *available at* <http://quickfacts.census.gov/qfd/states/48/4865000.html>.

² Beecher, Janice, et al., *Socioeconomic Impacts of Water Conservation* (2000). “Low-income households may have trouble raising and allocating the capital to invest in such repairs.” *Id.*; See Hasson, David S., *Water Utility Options for Low-Income Assistance Programs* 94:4 (Amer. Water Works Ass’n J 128 (Apr. 2002). The Water Utility in Portland Oregon instituted a fixture repair program designed to help low-income homeowners make plumbing fixture repairs that caused billing increases. *Id.* at 132-133. The program was expanded to include repairs that are in “relatively inaccessible locations because low-income customers tend to lack the resources to repair these leaks.” *Id.*; see Louie, Josephine, et al., *The Housing Needs of Lower-income Homeowners*, Harv. Univ. (1998). “Lower-income owners are also less likely than other owners to” make repairs such as plumbing repairs. *Id.*

overall consumption, thereby lowering bills and simultaneously conserving water for the utility as a whole.

In addition to making repairs to potable water leaks, the BMP may also include automatic replacement of high-flow fixtures found in a qualifying home. When high-flow toilets and showerheads are automatically replaced in addition to leak repair, the savings from the BMP will increase.

Implementation

These steps for implementation can be used as guidelines in developing a plumbing assistance program. Some of these steps may begin simultaneously, or they may be undertaken sequentially. Each step may need to be revisited and modified during the development process. It is beneficial to share ideas with other utilities throughout the development of this program.

1. Evaluate the customer base and develop a method or methods for reaching the target customer.
 - Determine the data source for evaluating customer base and identifying the target customer group. Evaluate the customer base to ensure there is a demographic that will be served by the program.
 - To develop criteria, identify what attributes make the customer ideal for the program, i.e., income, neighborhood, home value, or unusually high consumption for the household demographic group. *See below for an example list of criteria with rationale for each point.*
2. Talk to other utilities that have a program in place about their approaches and experiences. Ask if they are willing to share any of their planning or development documents, including bid documents, data collection programs, or past program analysis. Talk with them about the criteria you have established and any tentative goals for the program. ***It is important to note that what works for one utility may not work at another. This program is most effective when customized for a specific customer base.***
3. Establish program goals.
 - Program goals can include everything from testing pilot efforts to making certain types of repairs or replacements, engaging with a particular economically disadvantaged neighborhood, or achieving a certain volume of water savings.
 - Determine the extent of plumbing repairs/work that will be covered by the program.
 - Consider how the program will be promoted and any limitations such as caps on the number of homes served, limits on the number of visits to a single home, limits on the amount spent at each home, or time constraints.
4. Organize a referral or enrollment system to qualify participating customers in the program. Affordability or outreach departments within the utility itself may be a source

of referral. Alternatively, non-profit organizations or city offices like health departments may be able to help.

5. Identify what metrics need to be tracked to illustrate program progress, success and failure, and create a tool or approach for analyzing the program.
 - Some examples of performance metrics that may be useful in analyzing the program are water saved, average expenditure per home, zip code or city district, number and/or types of repairs made, and whether the homeowner is a senior, disabled, or falls into another identifiable group that may require home maintenance assistance.
6. Plan for the administrative process.
 - Consider who will take on which responsibilities and how information may need to be shared among staff.
 - Develop a database to store and track the collected data.
 - Consider creating a protocol that outlines the intent, rules, and various steps of the program.
 - Consider how plumbing invoices will be received, recorded, and tracked.
 - Have an approval process for plumbing services performed. It may be that when plumbing services reach a certain price point, those repairs merit planner/managerial approval, and that other amounts trigger directorial authorization, etc.
 - Pre-determine how participant information will be shared with the plumbing services provider.
7. Coordinate plumbing services.
 - The most common way to coordinate plumbing services is to contract with a plumbing company. In contracting for services, it is important to develop a price menu for services covered by the program. It is also important to include any price tiers that trigger approval requirements in the contract.
 - Alternatives to contracting may be more useful to some utilities. One example of an alternative is a Call for Participation that allows for participation by more than one plumbing company and more control over pricing.
8. Evaluate the program to determine what improvements should be made to improve efficacy.

Program Participant Criteria Example

Identifying the target customer group and then finding ways to reach them and make the program known to them is critical to program success. For this reason, it is important to think carefully about those customer attributes that will help identify participants who will benefit most and that will maximize the benefit to the utility. The following criteria are examples that may be used in establishing eligibility.

- Participant must be a residential class customer in a single-family residence.
 - This program is intended to aid homeowners who experience significant leaks resulting in substantial, often unmanageable, bills. Multi-family residences are generally operated by management companies or landlords who are responsible for maintenance services that maintain or repair plumbing and plumbing fixtures.
- Participant must both reside in and own the home in need of service
 - This criteria is an effort to ensure the longevity of the investment made by the program.
- Participant must be a water customer. Sewer only and storm water only customers are not eligible for this program.
 - This program targets high consumption of potable water sources. Some utilities operate separate programs that provide sewer assistance.
- Customers must meet 125% of federal poverty level guidelines. This standard is useful because health and human service departments in many places use this standard in qualifying people for a variety of assistance programs. The Federal Poverty Level Guidelines for 2015 are listed below.

Federal Poverty Level 2015^{3*}

Size of family unit	125 Percent of Poverty
1	\$14,712
2	\$19,912
3	\$25,112
4	\$30,312
5	\$35,512
6	\$40,712
7	\$45,912
8	\$51,112

*For families with more than eight members, add \$4,160 for each additional family member

- Home value should not exceed \$300,000 (per county appraisal district).
 - This number is a sample, but whatever number chosen by the utility should be based on home values in the areas that will be served by the plumbing assistance program. Periodically, the home value requirement should be reviewed and adjusted for changes in home values in the areas served by the program.
- Home located in designated zip codes.
 - The designated zip codes are based on census data indicating areas that experience economic disadvantages and have low home value but high home ownership.
- Consumptive use must exceed the prescribed amount for the family size.
- Participant qualifies by either being referred through a partnering non-profit organization or through direct invitation from the utility or the qualifying entity.
- A participant remains qualified for six months, unless the utility or qualifying entity learns of a change in status of any of the qualifying criteria. A participant may also be disqualified if they are non-responsive to contact made by utility staff, a representative from the qualifying entity, and/or by the plumber to schedule an appointment for assessment and service.

³ U.S. Dept. of Health and Human Serv., Federal Poverty Guidelines (Jan. 21, 2015), *available at* <http://www.nlegalclinic.org/Portals/0/2015%20Federal%20Poverty%20Guidelines.pdf>

Scope and Schedule

The scope and schedule may vary largely depending on the utility. For example, a utility that seeks referrals from non-profit organizations that it has worked with in the past may move more quickly to negotiate that service than a utility that needs to research local non-profits and start developing that relationship from scratch. Another variable is the time it may take to develop a tool to track the collected data.

Measuring Implementation and Determining Water Savings

Direct measurement of water savings from Plumbing Assistance Programs is challenging for several reasons. Economically disadvantaged households having chronic water leaks are likely to deploy strategies to minimize their losses that include turning off the water at their meter. They may also temporarily have household members shower at other locations or stop using the home bathroom. Once repairs are made, the water use may remain constant or may increase as people move back into the home and begin normal water usage.

1. Residential end use data: There are several reasonable methods for estimating what the water losses from the leaks would be if they were never repaired. One is to use data from the Water Research Foundation's Residential End Use Study which demonstrated that approximately 12 percent of single-family water usage is wasted due to repairable leaks. Using this 12 percent against the typical indoor usage of the utility service area could be a reasonable way to estimate how much water is saved by ensuring that there are no leaks. As an example, if the indoor water use average is 6,000 gallons/month or 72,000 gallons/year then a 12 percent reduction from this would be 8,640 gallons per year.
2. EPA estimates of leak waste levels: Another reasonable way to estimate water savings from plumbing assistance is to document what leaks are repaired and use data from the EPA Leak Education Program to estimate losses that have been eliminated.

Example: leaking toilet repair & leaking faucet repair

Assume at least six additional months of leaks

Faucet Loss: 600 gallons

Toilet Loss: 37,800 gallons

Total Savings for Repair: 37,800 gallons

Table 1: Water waste estimates from common leaks (in gallons)*

Leak source	Per day	Per week	Per month	Per year
Leaking toilet	200	1,400	6,300	75,600
Faucet leak	4	25	100	300
Showerhead leak	6	42	167	500
Outdoor leak in irrigation (1/32" leak)	75	525	2100	6300
Outdoor leak in drip irrigation	720	5040	20160	262080

*Data from <https://www.epa.gov/watersense/fix-leak-week>

Cost Effectiveness Considerations

The primary expenses for this type of program are the plumbing services and repairs, expenses for referrals made from entities external to the utility (if any), and the value of staff time and resources used on the program.

Considerations for cost effectiveness should include the cost of operating the program against the dollar value associated with the water savings. Another way to evaluate cost effectiveness is by balancing the dollar value associated with the average water savings per home against the average cost per home to provide plumbing services. Savings over and against the cost of the project can be estimated in advance. Tracking the water savings and expenses allows utility staff to refine estimates and improve accuracy.

Determination of the Impact on Other Resources

This program requires significant administrative oversight if it is to be operated in a meaningful way. The greatest impacts in running this program are on utility staff who manage and oversee its operations. Early on, setting up the administrative process and negotiating the plumbing services will take some time. Once the program is fully operational, staff will have to do things such as manage the invoices, perform spontaneous and unscheduled site checks to inspect the plumbing services, track and record data, and handle referrals. Ultimately, the impact to staff will depend on the scope and scale of the project, as well as efficiency in program management. Some tools may help mitigate impacts, such as online application or referral systems or the format of referral information coming from outside sources or other departments within the utility. Databases or customer information systems (such as customer service or billing systems) that can generate reports in digital formats can also help reduce the manual labor otherwise required by staff.

References for Additional Information

Beecher, Janice, et al., *Socioeconomic Impacts of Water Conservation* (2000).

Hasson, David S., *Water Utility Options for Low-Income Assistance Programs* 94:4 (American Water Works Association Journal 128 (Apr. 2002).

Louie, Josephine, et al., *The Housing Needs of Lower-income Homeowners*, Harvard University (1998).

Wolff, Aubry, *Customer Characterization: Analysis to Prioritize BMP Selection BMP*

[https://www.twdb.texas.gov/conservation/BMPs/Mun/doc/2019%20Update%20Files/2.4%20Customer%20Characterization 2019.pdf?d=15138](https://www.twdb.texas.gov/conservation/BMPs/Mun/doc/2019%20Update%20Files/2.4%20Customer%20Characterization%202019.pdf?d=15138)

Wolff, Aubry, et al., *Utility Customer Profile Guide for Water Conservation Planning*, Texas Water Resources Institute (2015)

<http://twri.tamu.edu/publications/educational-materials/>.