Michigan Water Assistance Study

Background and Methodology

November 2024

PSC

Table of Contents

Background

Early in 2023, Senator Stephanie Chang convened a group of stakeholders to discuss the development of a statewide water affordability program. Proposed legislation would require the enrolled customer to pay a bill no more than 2 percent of average household income in the service area if household income is under 135 percent of federal poverty level (FPL), and no more than 3 percent of average household income in the service area if household income is between 136 and 200 percent of FPL. The state program would cover the gap payment—the difference between the actual bill and the capped bill based on household income. To increase understanding of need, cost, and impact of such a program, the group contracted Public Sector Consultants (PSC) to research and analyze the intersection of household income and water utility rates.

To develop the methodology and understand the breadth of data already available, PSC met with water affordability experts from Michigan State University (MSU), the Great Lakes Water Authority, and the public policy consulting firm Raftelis. To get the broadest sense of water affordability in Michigan, we sought to collect water rate data on at least 75 percent of the state's population served by public water systems. With Dr. Janice Beecher, former director of the MSU Institute of Public Utilities, and Dr. Eric Scorsone, director of MSU Extension Center for Local Government Finance and Policy, PSC created a data sampling plan that sought to utilize as much existing information as possible and then supplement that data with water utility tariff information.

Ultimately, PSC collected and compiled water rate data for 470 water utilities, representing approximately 69 percent of the state's population, including data from at least one public water system in each of Michigan's 83 counties.

Exhibit 1 shows the number of water systems surveyed per county throughout Michigan.

EXHIBIT 1. Water/Sewer Communities per County Surveyed

Source: Gosling Czubak Engineering Sciences, Inc. 2022; Ottawa County Road Commission 2023; Read et al. 2022

Understanding Household Affordability

Senator Chang's workgroup developed the parameters to conduct the affordability analysis, with gap payment levels aligned with the following guidelines:

- Households with incomes below 135 percent of the FPL: Combined water and sewer bill must be less than 2 percent of average household income
- Households with incomes between 136 and 200 percent of the FPL: Combined water and sewer bill must be less than 3 percent of average household income

Water/sewer rates were broken down into separate price-per-gallon, price-per-person, and fixed costs estimates for each water utility, and the median price-per-person cost and median fixed cost were then calculated for each geographic area of analysis.

PSC then estimated the number of households that would qualify for a water assistance program based on the above guidelines. PSC used U.S. Census Bureau Public Use Microdata Sample (PUMS) to generate estimates in each geographic area of analysis, accounting for household size, poverty level, annual household income, and water service charges. Estimates were made for each Public Use Microdata Area (PUMA) in the state.[1]

In areas where the annual cost of water exceeded 2 or 3 percent of the household income (depending on FPL), the remaining difference was calculated as the required gap payment.

Assumptions

PSC's analysis is based on the assumptions outlined in the following sections.

Population Characteristics

To measure affordability at the household level, PSC considered numerous data sources that contained statistics on household incomes in relation to the FPL, household size, and whether the household self-reported that they receive a water bill. Ultimately, PSC researchers referred to the PUMS data, as the data set contained the intersection of FPL and household size characteristics, which is not available in ACS data. PSC used statewide PUMS sample data and associated weights to assess the impacts of household size and poverty status on a household's ability to afford its water bill.

Another benefit of the PUMS data was that households self-report whether they pay a water bill. Note that for Michiganders with household incomes below 200 percent of the FPL, only about 50 percent self-report paying a water bill. The reasons why some otherwise-eligible households do not pay a water/sewer bill include use of private wells, those for whom water is included in rent, and other reasons not enumerated in the Census.

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[1] Public Use Microdata Areas (PUMAs) are geographic areas that divide the state into geographic areas containing no fewer than 100,000 people.

Water Cost and Usage

Water community pricing data was aggregated to the appropriate PUMA to calculate an average household cost. To standardize our calculations, we used the cost of a monthly household average usage of 3,000 gallons to calculate the per-person water and sewer rates plus fixed costs, which we applied to calculate the household cost based on 50 gallons per person per day. This amount likely varies by income, age, and other variables.

Prior studies on water service affordability indicated that 79 gallons of water consumed per day was the average for the state of Michigan (Blount 2021). However, a study by the University of Michigan Water Center determined that a water-use rate of 50 gallons per person per day was more accurate because a portion of the estimated residential household usage was outdoor usage, which is often billed differently and does not apply to many rental apartments (Read et al. 2022, 14). A 2016 report by the Water Research Foundation found a similar figure, at 58.6 gallons per capita. To align with the most current research on water affordability, PSC used the 50-gallon standard.

Drainage costs were not included in this analysis due to inconsistent data collected on the impacts of drainage charges on households across the state.

Fixed and Variable Costs

When calculating the price per person, utilities that had only fixed costs for water or sewer were not included when calculating PUMA median price-per-person estimates to not distort the price-per-person costs. Therefore, only utility communities where the price per person could be calculated for both water and sewer were included in the median price-per-person estimates for each PUMA. Ultimately, every PUMA's median cost estimates were calculated from at least one utility serving that area and then applied to all household sizes and FPL brackets developed using PUMS data.

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