



Michigan Water Rates Study

Background and Methodology

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Background

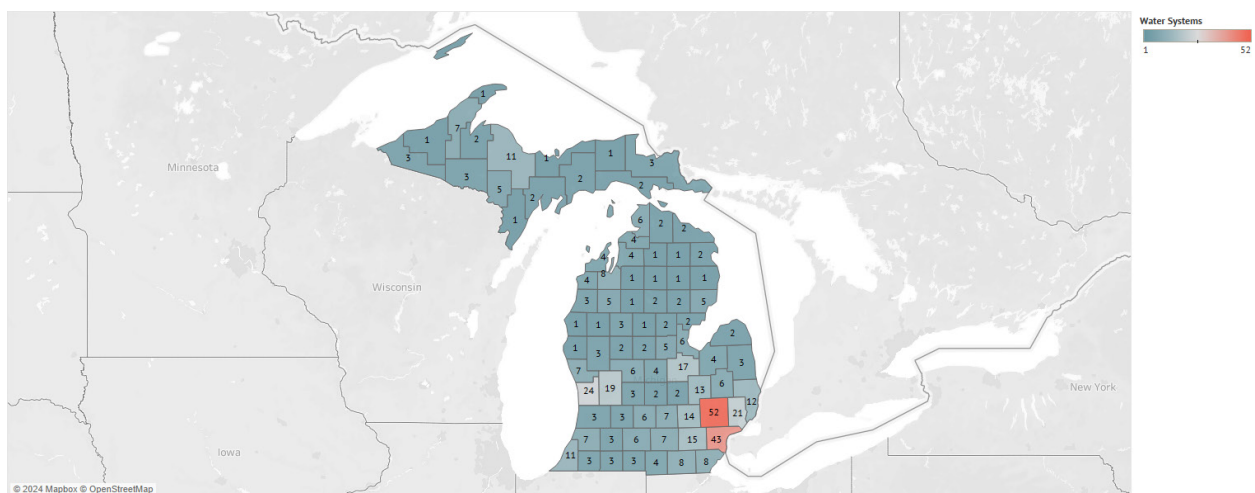
Early in 2023, Sen. Stephanie Chang convened a group of stakeholders to discuss the development of a statewide water affordability program. Proposed legislation would require the enrolled customer to pay a bill no more than 2 percent of average household income in the service area if household income is under 150 percent of federal poverty level (FPL), and no more than 3 percent of average household income in the service area if household income is under 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 150 percent of the FPL: Combined water and sewer bill must be less than 2 percent of average household income
- Households with incomes from 150 to 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 county.

PSC used U.S. Census Public Use Microdata Sample (PUMS) data to estimate ratios of household size per water service charge per FPL bracket. For example, PSC researchers found that only 6.5 percent of single-person households in the 50 to 99 percent FPL bracket paid for water. These statewide PUMS-based percentages for each household size and FPL bracket were then applied to American Community Survey (ACS) county estimates of the number of individuals in each poverty bracket per county.

Using Senator Chang’s guidelines for assessing affordability based on FPL as noted previously and the estimated annual price of water and sewer, PSC estimated the number of households with incomes below 200 percent of the FPL by six different income brackets. In counties where the annual cost of water exceeded 3 percent of the median income level of that bracket (or 2 percent for households with incomes below 150 percent of the 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

According to 2022 Census data, there were approximately 4,009,253 households in Michigan, of which an estimated 30 percent were under 200 percent of the FPL.

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.

We assume statewide PUMS estimates are a reasonably accurate reflection of the household size and water bill payment status of the same poverty brackets in each county.

Water Cost and Usage

Water community pricing data was aggregated to the appropriate county level 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 county 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 county. For those five counties with only fixed costs for water and sewer, the fixed costs for water and sewer were applied to all households, regardless of household size. Ultimately, every county's median cost estimates were calculated from at least one utility serving that county and then applied to all household sizes and FPL brackets developed using PUMS and ACS data.

Reference List

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