

APPENDIX E: Water/Sewer Service Affordability Analysis

Technical Memorandum

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Subject: Water/Sewer Service Affordability Analysis

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Background

M.Cubed completed a water service affordability analysis for the Water Department in 2016. That study addressed two questions in relation to proposed rate increases:

1. Is the ratio of annual water service cost to median household income (MHI) expected to exceed 2%?
2. What percentage of households are expected to pay more than 2% of their income for water service?

The 2% MHI threshold was based on proposed state legislation (AB 2334), which included it as a statewide standard for assessing water service affordability.¹ Similar thresholds also have been used by US EPA and the California Department of Public Health to assess water and sewer service affordability. More recently, other metrics have been proposed for assessing utility service affordability which are discussed in the next section.

The 2016 study concluded that annual water cost was expected to be less than 2% of MHI under all rate increase proposals, averaging slightly under 1% for inside-city customers and slightly over 1% for outside-city customers. However, the study also concluded that the percentage of customers paying more than 2% of their income for water service would likely increase from less than 10% under the rates existing at the time of the study to more than 20% under the proposed rates. Thus, water service costs potentially could constitute a financial burden for approximately one-fifth of residential customers under the proposed rate increases.

In 2016 the Water Department adopted a new rate design and a schedule of rate increases in order to pay for major water system rehabilitation and upgrade projects.² By 2020, the cost of residential water service had increased in nominal terms by roughly 50% to 100%, depending on the amount of water used by a household.³

Given the magnitude of the increases, the Water Department has requested that we update the water service affordability analysis we completed in 2016. The scope of work for this update specifies completion of the following tasks:

1. Compile data on household water use, income level, and other socio-economic status (SES) variables for all census block groups fully or partially within the Water Department's service

¹ Introduced in 2012, AB 2334 ultimately was not passed by the legislature.

² See <https://www.cityofsantacruz.com/home/showdocument?id=53194>.

³ Current rates are based on those in effect between July 1, 2019 and June 30, 2020 (<https://www.cityofsantacruz.com/home/showdocument?id=76586>). A household using 4 CCF/Mo, the median monthly usage in 2019, would face an increase of 61%; a household using 7 CCF/Mo, the typical pre-2016 monthly usage, would face an increase of 78%; and a household using 10 CCF/Mo, a typical level of residential water use in other parts of California, would face an increase of 98%.

area. Using these data, calculate median monthly water use, MHI, and other SES indicators for each census block group.⁴

2. Calculate water service affordability metrics at the block group level. In addition to the metrics used in the 2016 study, affordability metrics used in more recent studies, such as the Alliance for Water Efficiency's study on Water Affordability in Detroit, Michigan (Alliance for Water Efficiency, 2020), should be developed.
3. Prepare a technical memorandum describing the data and methodology and summarizing the results of the affordability analysis.

This Technical Memorandum constitutes the completion of these tasks. The remainder of the memorandum is organized as follows. In the next section, we review alternative metrics that have been proposed for assessing utility service affordability. We then describe the construction of the affordability metrics used in this analysis. Lastly, we summarize our findings and recommendations. Attachment A provides the data and results of the analysis by census block group.

Review of Utility Service Affordability Metrics

Most water and sewer service affordability indicators stem from affordability criteria developed by EPA in the mid-1990s for assessing whether federal water and wastewater-related mandates might result in undue economic hardship within a community (Raucher, et al., 2019). Within the context of wastewater regulation, EPA put forward two impact measures:

- **Residential Indicator (RI).** This indicator computes the average household cost of sewer service relative to service area MHI and bins the result into one of three categories:
 - Low financial impact: costs per household are less than 1% of MHI.
 - Mid-range financial impact: costs per household are between 1% and 2% of MHI.
 - High financial impact: costs per household are greater than 2% of MHI.
- **Financial Capability Index (FCI).** This is a composite of six economic indicators of a municipality's financial capacity: municipal bond rating, net debt service, MHI, unemployment rate, property tax burden, and property tax rate. Lower composite scores imply weaker economic conditions and thus a greater likelihood federal mandates would cause substantial economic impact on the community or service area.

Whereas the RI is focused on household affordability, the FCI addresses the community's overall ability to pay for compliance costs. As noted by Raucher, et al. (2013), the two concepts are interrelated in the

⁴ Block groups are statistical divisions of census tracts and generally defined to contain between 600 and 3,000 people. A block group covers a contiguous area and each census tract contains at least one block group. Within the standard census geographic hierarchy, block groups never cross state, county, or census tract boundaries. There are 84 block groups wholly or partially within the Water Department's service area.

sense that the community's ability to comply with water quality mandates depends on "the ability (and willingness) of its residential and other customers to provide sufficient revenue to assure sustainable utility operation and credit-worthiness."

During the same time period, EPA also considered the affordability of drinking water regulations within the context of small communities (those with populations under 10,000). Specifically, EPA stated it would deem a National Primary Drinking Water Regulation to be unaffordable to small communities if it resulted in an average bill in excess of 2.5% of national MHI. According to Raucher, et al. (2019), the 2.5% of national MHI benchmark was specific to small water systems. EPA did not develop similar benchmarks for the category of medium and large utilities.

Nonetheless, the following benchmarks are frequently advanced in the context of water and sewer service affordability:

- Sewer service is deemed affordable if the typical household bill is less than 2% of service area MHI.
- Water service is deemed affordable if the typical household bill is less than 2.5% of service area MHI.
- Combined water and sewer service is deemed affordable if the typical household bill is less than 4.5% of service area MHI.

These benchmarks have been subject to a number of critiques (Raucher, et al. 2013, Raucher, et al. 2019, Teodoro 2018) which generally distill into the following three points:

- **Average vs Essential Indoor Use (EIU).** Using average demand to calculate utility costs will overstate the cost of essential service. Average demand imbeds a lot of discretionary water use and is skewed by a small proportion of customers using very large amounts of water. Affordability should instead be assessed in terms of the ability of customers to pay to meet their basic needs for drinking, cooking, health, and sanitation. In this respect, median or minimum monthly water use is likely to provide a better measure of essential water use. Median monthly water use in Santa Cruz is currently about 4 CCF while median February water use, which is almost entirely indoor water use, is about 3.5 CCF. The state has set an indoor water use standard of 55 GPCD, which for the average Santa Cruz household size equates to about 5.3 CCF. The CPUC requires the utilities it regulates to use 6 CCF in their affordability assessments. Both the state and the CPUC thresholds are too high for Santa Cruz. Santa Cruz median February water use, equal to approximately 36 gallons/capita/day (GPCD), provides a reasonable measure of EIU.
- **Median vs Low Income.** Measuring affordability on the basis of an entire community's MHI is likely to gloss over impacts on lower-income households. This was shown in our 2016 analysis where up to 20% of residents were expected to confront affordability issues even though none

of the proposed rate designs exceeded the service area wide MHI threshold. Other income thresholds have been proposed, most notably, the 20th percentile income level (Raucher et al. 2019; Teodoro, 2018). Teodoro (2018) argues that the 20th percentile income level is typically identified with the lower boundary of the middle class where households may have very limited financial resources, but also may not qualify for income assistance programs. Another approach is to disaggregate the analysis. Rather than calculate affordability for the entire service area, break it up into smaller pieces and separately calculate affordability for each piece. As well as allowing for geographic differences in household income, occupancy, and water use, this approach has the advantage of pinpointing which neighborhoods within a service area are most likely to struggle with affordability issues.

- **Income vs Disposable Income.** Water and sewer bills may be low as a percentage of income, but much higher as a percentage of disposable income after deducting other essential living costs, such as food, housing, and health care. The difference can be especially large in communities, such as Santa Cruz, with high housing costs.

In response to these critiques, several alternative affordability metrics have been proposed. Here we provide a general overview of the five approaches that have received the most attention. For a more detailed discussion of their advantages and limitations, see Raucher et al. (2019).

- **Household Burden Indicator (HBI).** The HBI metric was proposed in Raucher et al. (2019). It is a variant of EPA's RI discussed previously. There are two key differences between the HBI and RI. First, HBI is calculated using the combined cost of water and sewer service whereas RI only considers sewer service. Second, HBI uses the 20th rather than the 50th percentile income level. Justifications for using the 20th percentile income level include: (1) households at or below the 20th percentile typically are the most economically challenged members of the community; (2) the 20th percentile is generally considered the demarcation between low income and middle-class households; (3) many assistance programs have eligibility cut-offs at or near the 20th percentile; and (4) income distribution data are readily available from the US Census facilitating computation of the metric.
- **Affordability Ratio at 20th Income Percentile (AR₂₀).** The AR₂₀ metric was proposed in Teodoro (2018). It compares the cost of essential water and sewer service to the 20th percentile income level net of costs for housing, food, health care, energy, and taxes. As a general rule of thumb, a 10% threshold is suggested by Teodoro, meaning water and sewer service would be deemed affordable if it cost less than 10% of disposable income at the 20th percentile income level. The primary limitation of this metric is its reliance on disposable income. Computation of representative costs for housing, food, health care, etc., is anything but straightforward. While the American Community Survey compiles data on housing costs, it does not do so for the other

living expenses included in the AR₂₀ metric.

- **Weighted Average Residential Index (WARI).** The WARI metric was proposed as a way to account for geographic differences in household income, occupancy, and water use in assessing water and sewer service affordability. WARI leverages the fact that the US Census reports the number of households in each census tract by income category (e.g. number of households with income between 10-20K, 20-40K, 40-60K, etc.). The average or minimum bill is calculated for each census tract using customer-level billing data and this bill is then divided by the midpoint of each income category. These income-category-specific RIs are then formed into a weighted average RI for the census tract where the weights are equal to the number of households in each income category. A service area weighted average RI can then be formed from the census tract RIs where the weights are the number of households in each census tract. The main advantage of this approach is that it provides geographically disaggregated estimates of utility service affordability. This is useful for pinpointing what parts of the service area are most likely to struggle with paying for water and sewer service. However, it is not clear that the service area metric has any clear advantage over the basic RI. Additionally, it is not obvious that calculating separate RIs for each income category and then forming a weighted average for the tract is preferable to simply using the tract's MHI to compute the tract's RI. It is useful to note that using block groups rather than census tracts will result in roughly a three-fold increase in the level of geographic disaggregation. The tradeoff, however, is that ACS block group estimates are subject to more sampling error than are census tract estimates.
- **Hours at Minimum Wage (HM).** The HM metric divides the cost of essential water and sewer service by the locally prevailing minimum wage to determine the number of hours a minimum wage worker would need to work in order to pay for water and sewer service. This is not a particularly useful metric for assessing utility service affordability because there is no clear relationship between the metric and a household's income.⁵ For example, it cannot be used to determine the percentage of households that are above or below some benchmark HM because household income derives from many possible sources, only some of which may be related to the minimum wage.⁶ We do not consider this metric further in this analysis.

⁵ Nonetheless it has recently been proposed by the CPUC as one of three metrics for assessing utility service affordability. See CPUC D.20-07-032.

⁶ For instance, household income reported in the Census American Community Survey is the sum of the amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income.

- **Poverty Prevalence Indicator (PPI).** The PPI was proposed by Raucher, et al. (2019). PPI is not a water and sewer service affordability indicator. Rather it indicates the percentage of households that have income below 200% of the Federal Poverty Level (FPL). According to Raucher, et al. (2019), 200% of FPL is a commonly used cutoff point for a range of Federal and state income assistance programs. PPI is meant to be used in conjunction with an affordability metric such as the HBI metric. Areas where both the HBI and PPI are high are more likely to face affordability challenges than areas where only one or the other is high. In this sense, the two metrics can be used to provide a fuller picture of the extent to which utility service affordability is likely to be an issue. For example, the Alliance for Water Efficiency used HBI and PPI in conjunction with one another to assess water and sewer service affordability in Detroit, Michigan (Alliance for Water Efficiency, 2020).

Affordability Metric Construction

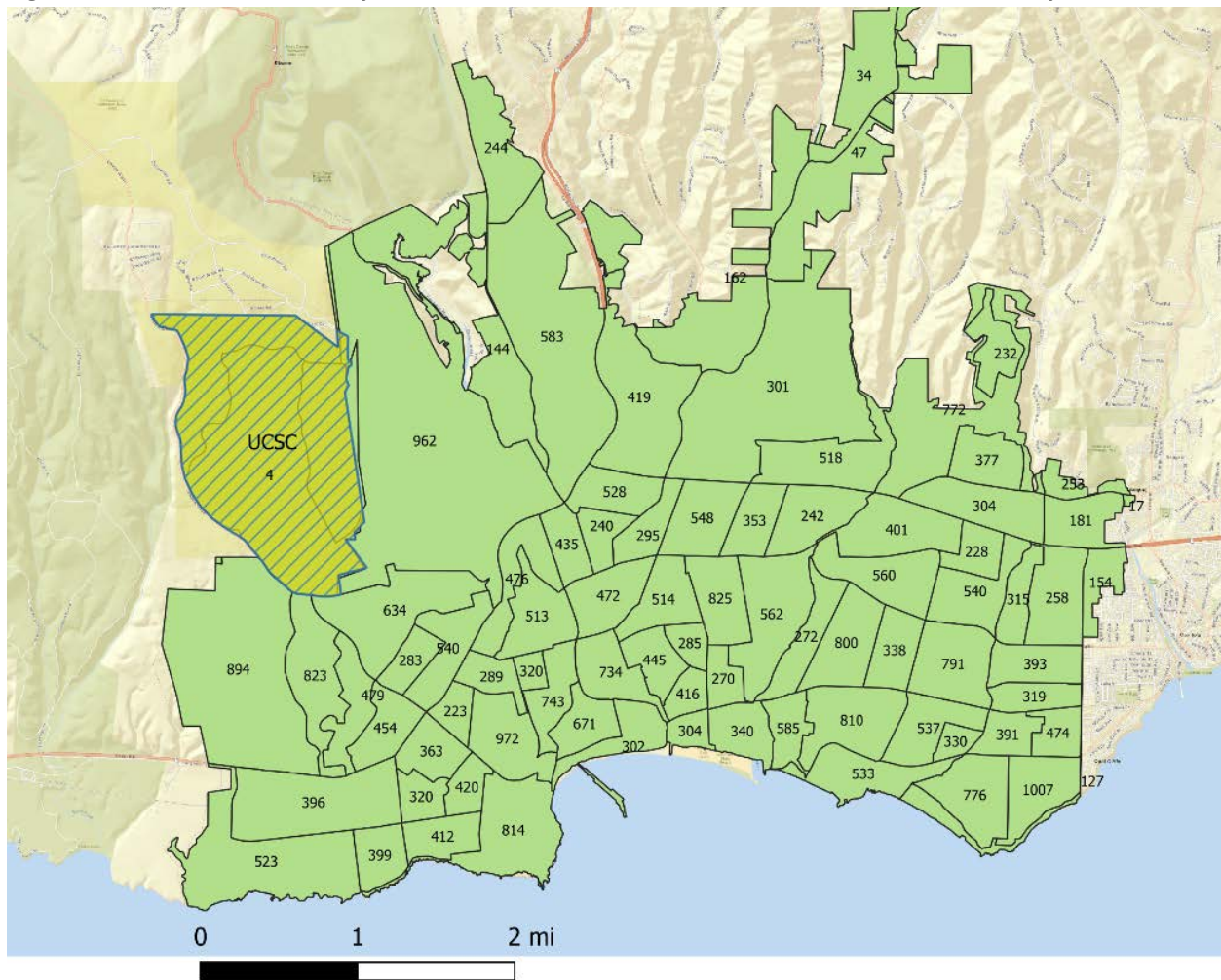
Our analysis does not rely directly on any single metric discussed in the previous section. Instead, we developed a composite metric that attempts to balance the advantages and disadvantages of the different approaches. The metric we use most closely aligns with the WARI metric in that it relies on geographically disaggregated household water use and income data. We feel this is superior to providing a single service area wide measure of affordability since it will usually be the case that water and sewer service will be deemed affordable for the majority of customers. The key question is for how many customer is this unlikely to be the case? A disaggregated analysis is better able to answer this question.

Here we outline the steps we used to construct our affordability metric:

- We compute an affordability ratio for each census block group in the service area. This divides the service area into 84 different block groups, as shown in Figure 1. We use 2019 customer billing data to determine the number of households that are served by the Water Department within each block group.⁷ The household count is shown within the boundary of each block group in Figure 1.
- We use February metered water use in 2019 as a proxy for EIU. We divide a meter's water use by the number of housing units it serves in order to determine water use per household. We then use this data to calculate median February water use per household for each block group.

⁷ For each residential service meter, the Water Department records the number of housing units served. This information is used by the Water Department for billing purposes.

Figure 1. Santa Cruz Water Department Service Area Intersected with Census Block Groups



These medians vary by block group. For the service area as a whole, median February water use was about 3.5 CCF per household in 2019, which equates to approximately 36 GPCD.

- Next we calculate the water and sewer service cost per household based on each block group’s median EIU. We use the water and sewer service rates that were in effect between July 2019 and June 2020 for this calculation. Separate bills are calculated using the inside and outside city rates and then a weighted average bill is formed using the number of households in the block that are located within versus outside of the city limits. To calculate the water service meter charge, we calculate the meter charge for each meter in the block group, divide by the number of households served by the meter, and then calculate the median of these values. A similar conversion is not required for fixed sewer service charges because these charges are already denominated in dollars per housing unit. The sewer charge for outside city customers, however, is part of their property tax assessment. We convert these annual assessments into equivalent dollar per month sewer charges for purposes of this analysis.

- Using these data, we construct two affordability ratios – one only for water service and another for both water and sewer service. For the ratio’s denominator, we use MHI adjusted for median housing costs (MHC).⁸ In this regard, we are following guidance for assessing utility service affordability recently adopted by the CPUC.⁹ Essentially, this approach splits the difference between assessing affordability on the basis of disposable income, as advocated by Teodoro (2018), versus using gross income, which ignores cost of living considerations. While economic theory favors using disposable income, the CPUC concluded that developing robust measures of disposable income is usually impractical. However, it also noted that in California housing costs constitute the single largest household expense, can vary significantly across and within regions, and are estimated by the US Census. Importantly, in addition to basic rent and mortgage costs, US Census estimates of MHC include other housing-related expenses, including real estate taxes, property insurance, electricity, gas, water and sewer costs, and home owner association dues and fees. Thus adjusting MHI for MHC goes a long ways towards estimating disposable income. Because MHC includes water and sewer costs, we add back the calculated water and water and sewer bill when constructing the denominator of the affordability ratios so as not to double count.
- An important difference between this analysis and the one we completed in 2016 is our incorporation of multi-family households into the construction of the affordability metrics. The 2016 analysis only considered single-family households, and while they comprise the majority of residential customers, the analysis nonetheless excluded an important demographic for assessing utility service affordability. Using disaggregated data allows us to calculate water use and billing statistics per housing unit rather than per meter. This treatment aligns better with the MHI and MHC estimates from the American Community Survey which are based on all sampled housing units in the block group regardless of structure type (e.g. single- vs. multi-unit structures) and tenure (e.g. owner vs. renter).

The final affordability ratios for water and combined water and sewer are:

$$AR_{W,i} = \frac{Bill_{W,i}}{MHI_i - MHC_i + Bill_{W,i}}$$
$$AR_{W\&S,i} = \frac{Bill_{W\&S,i}}{MHI_i - MHC_i + Bill_{W\&S,i}}$$

where *i* indexes the block group, $Bill_W$ is the bill for water service at median February water use and $Bill_{W\&S}$ is the combined bill for water and sewer service at median February water use. As with WARI, the

⁸ MHI estimates are from ACS Table B19013 while median housing cost estimates are from ACS Table B25105.

⁹ See CPUC D.20-07-032.

block group affordability ratios can be formed into a weighted average service area wide affordability ratio where the number of housing units in each block group are used as the weights.

In addition to the affordability ratios, we also estimate PPI – the poverty prevalence indicator -- for each block group. This estimates the percentage of households in each block group with income less than 200% of FPL.

We use the PPI in conjunction with the AR_{W&S} to construct the Water & Sewer Service Financial Burden Matrix shown in Table 1. This is similar to the matrix developed by Raucher et al. (2019) using the PPI and HBI metrics. However, we use different thresholds for AR_{W&S} than Raucher et al. use for HBI since AR_{W&S} is based on MHI whereas HBI is based on 20th percentile income. That said, it is important to emphasize that the thresholds we use for AR_{W&S}, while informed by affordability thresholds found in the literature, are nonetheless based on our professional judgement.

Table 1. Water & Sewer Service Financial Burden Matrix

AR _{W&S}	Poverty Prevalence Indicator (PPI)			
	< 10%	10 – 30%	30 – 50%	> 50%
< 1.5%	Low	Low	Low-Moderate	Low-Moderate
1.5% - 2.5%	Low	Low-Moderate	Moderate	Moderate
2.5% - 3.5%	Low-Moderate	Moderate	Moderate	Moderate-High
3.5% - 4.5%	Moderate	Moderate	Moderate-High	High
> 4.5%	Moderate-High	Moderate-High	High	High

Notes:

AR_{W&S}: Combined water and sewer cost at essential level of service as a percentage of MHI adjusted for housing costs

PPI: Percentage of households in block group with income less than 200% FPL.

Analysis Results

First we present summary statistics on water use, water and sewer bills, and household income and housing costs. We then provide tabulated and graphical results on water and combined water and sewer service affordability and financial burden.

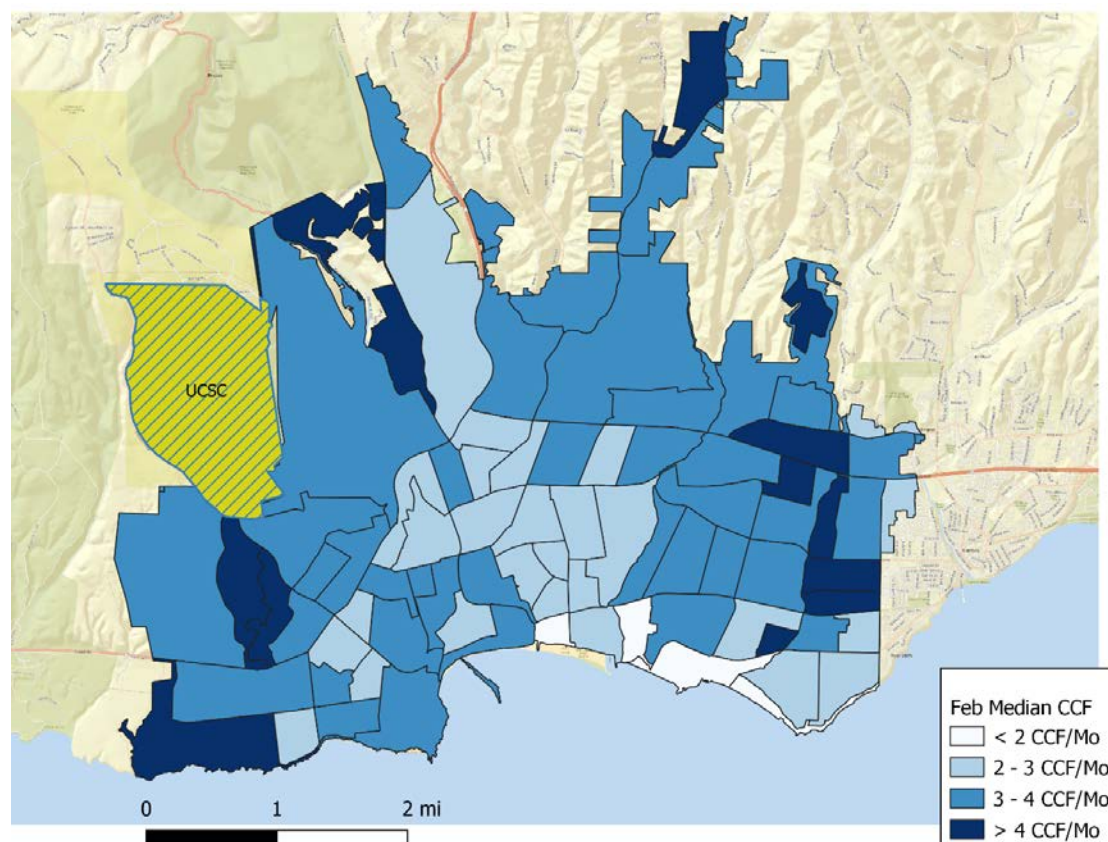
Essential Indoor Use (EIU)

Table 2 and Figure 2 show the distribution of median February 2019 water use per housing unit by census block group. As noted above, we are using median February water use as a proxy for essential indoor water use for basic drinking, cooking, health, and sanitation requirements. Approximately 85% of housing units served by the Water Department are located in census block groups with median water use between 2 and 4 CCF. The census block groups in Figure 2 showing water use of less than 2 CCF/Mo. contain a large number of second homes and vacation rentals, which may explain the very low February water use in these block groups.

Table 2. Number of Households by Essential Water Use Level

Median Feb Water Use	Freq.	Percent	Cum.
< 2 CCF/Mo	1,549	4.23	4.23
2-3 CCF/Mo	12,394	33.86	38.09
3-4 CCF/Mo	18,536	50.64	88.73
> 4 CCF/Mo	4,124	11.27	100.00
Total	36,603	100.00	

Figure 2. Essential Water Use by Census Block Group (CCF/Mo/Household)



Water and Sewer Bills for EIU

Table 3 and Figure 3 show the distribution of EIU water bills by census block group. Approximately 96% of households served by the Water Department are located in census block groups where the EIU water bill is \$60/month or less and approximately 39% are located in block groups where the EIU water bill is \$40/month or less.

Table 3. Number of Households by Water Bill Amount for Essential Water Use

EIU Water Bill	Freq.	Percent	Cum.
\$20-\$40	14,098	38.52	38.52
\$40-\$60	20,875	57.03	95.55
> \$60	1,630	4.45	100.00
Total	36,603	100.00	

Figure 3. Water Bill for Essential Water Use by Census Block Group (\$/household)

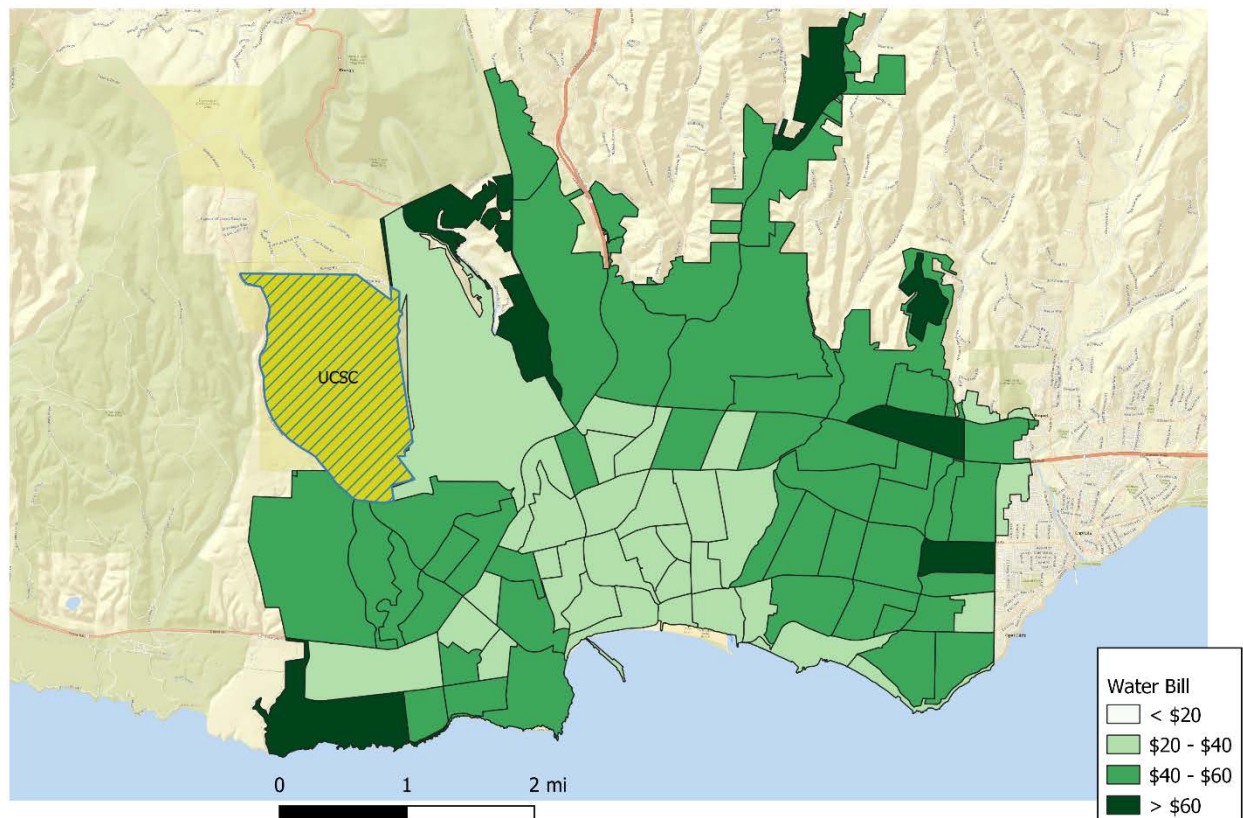
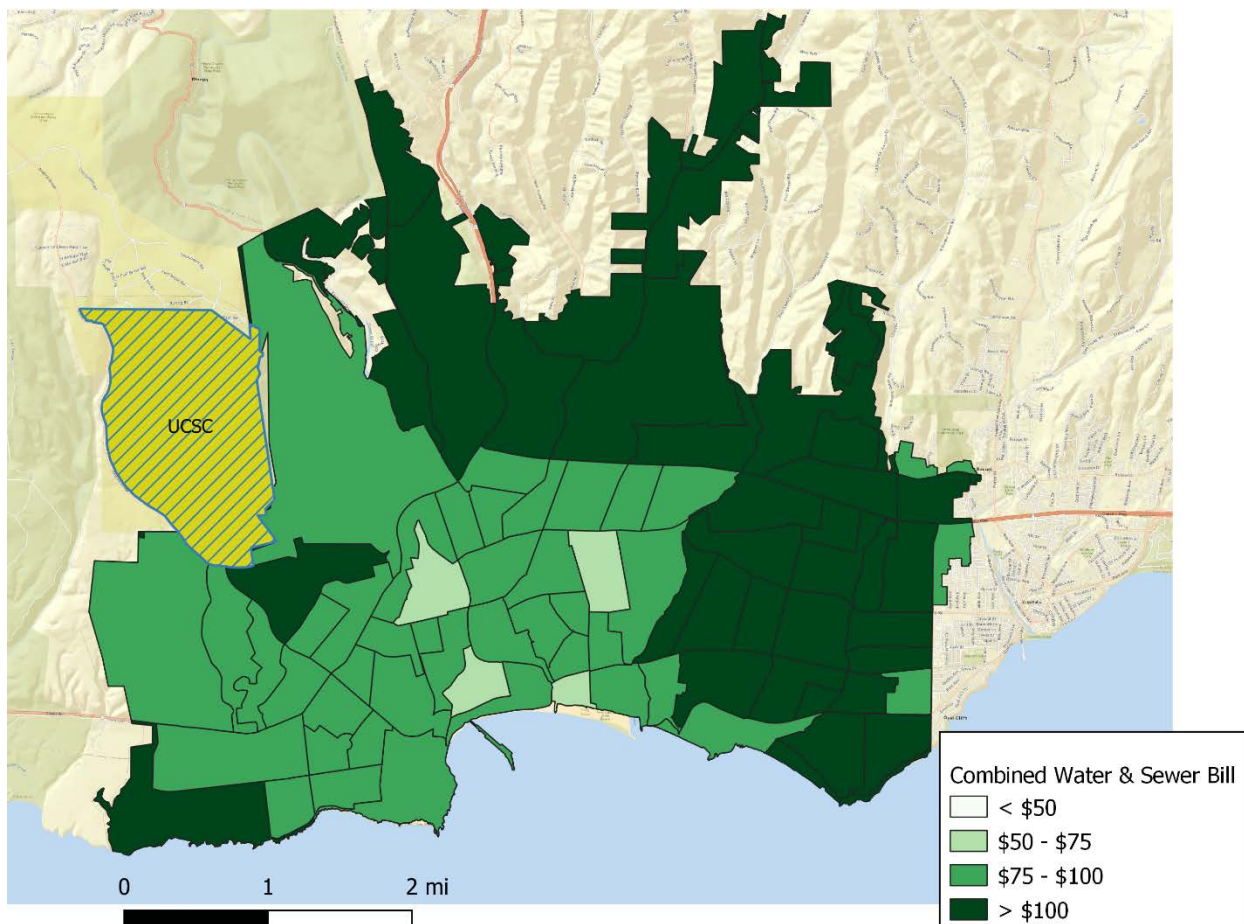


Table 4 and Figure 4 show the distribution of combined water and sewer bills for EIU by census block group. Approximately 60% of households served by the Water Department are located in census block groups where the combined water and sewer bill for EIU is \$100/month or less.

Table 4. Number of Households by Combined Water & Sewer Bill Amount for Essential Water Use

EIU Water & Sewer Bill	Freq.	Percent	Cum.
\$50-\$75	2,313	6.32	6.32
\$75-\$100	19,562	53.44	59.76
> \$100	14,728	40.24	100.00
Total	36,603	100.00	

Figure 4. Combined Water & Sewer Bill for Essential Water Use by Census Block Group (\$/household)



Income and Housing Costs

Table 5 and Figure 5 show the distribution of households by MHI. Approximately 15% of households served by the Water Department are located in census block groups with MHI less than \$50,000. Households in these census block groups are likely to have incomes that are at or below 200% of the Federal Poverty Level (FPL) and may be significantly more likely to struggle with meeting basic living expenses.

Table 5. Number of Households by MHI

MHI	Freq.	Percent	Cum.
< \$50k	5,480	14.97	14.97
\$50-\$75k	12,438	33.98	48.95
\$75-\$100k	8,496	23.21	72.16
\$100-\$150k	8,858	24.20	96.36
> \$150k	1,331	3.64	100.00
Total	36,603	100.00	

Figure 5. MHI by Census Block Group

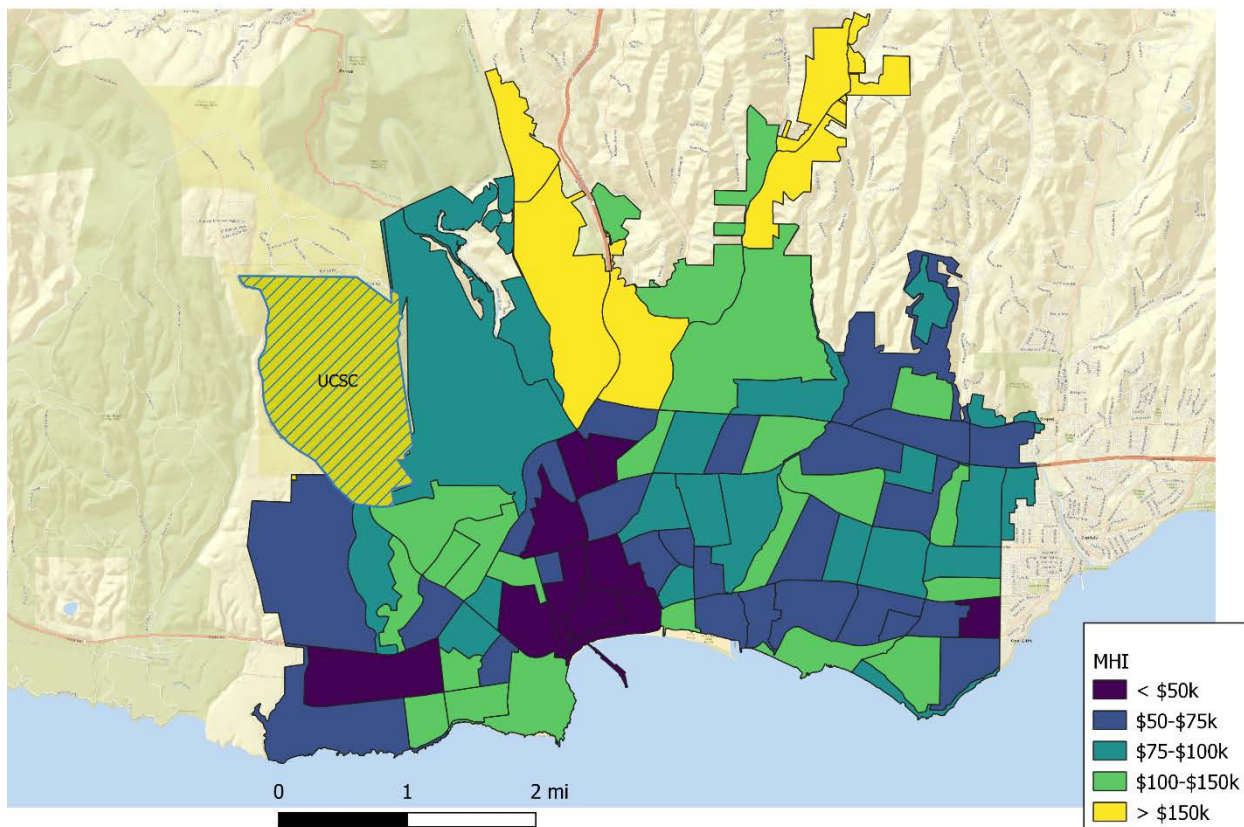
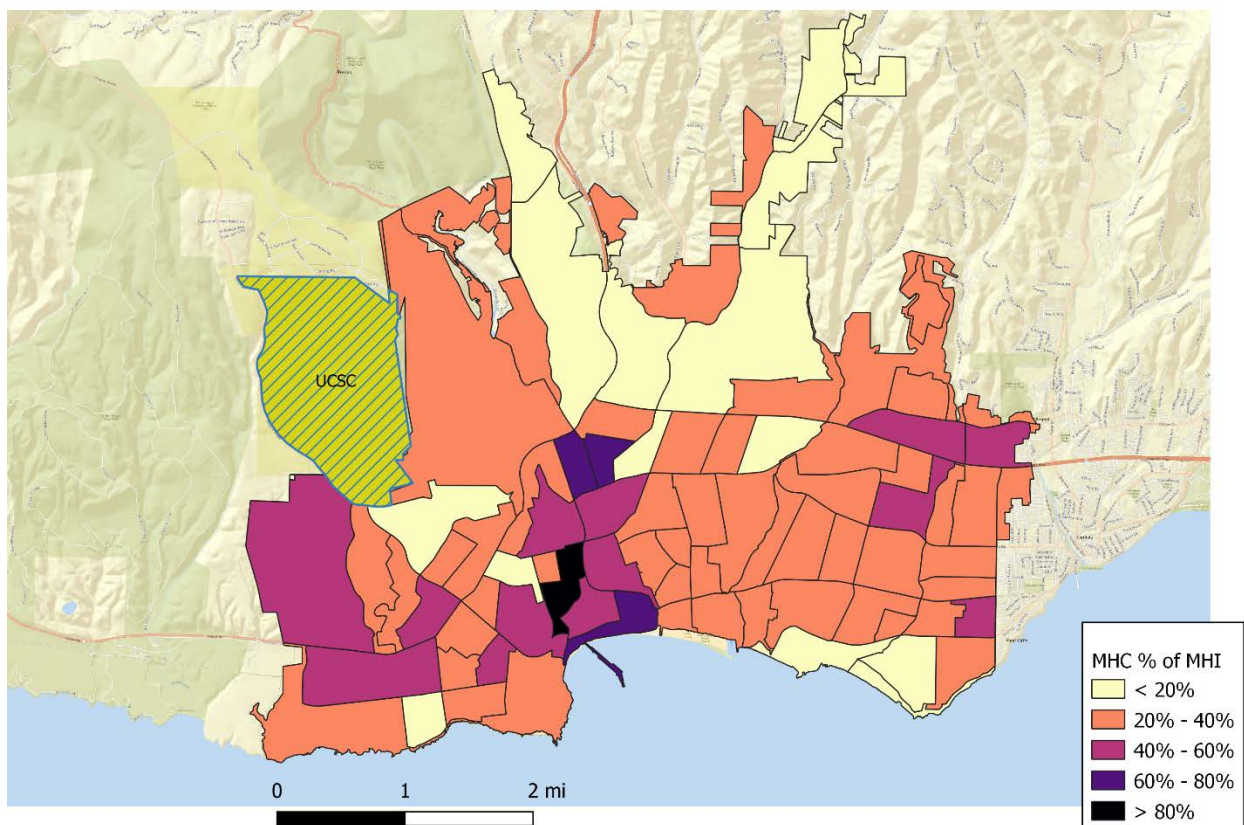


Table 6 and Figure 6 show the distribution of households by median housing cost (MHC) relative to median household income (MHI). Approximately 24% of households served by the Water Department are located in census block groups where MHC exceeds 40% of MHI. Households in these census block groups may be significantly more likely to struggle with meeting basic living expenses after paying for housing costs.

Table 6. Number of Households by MHC as a Percent of MHI

MHC as % MHI	Freq.	Percent	Cum.
< 20%	4,927	13.46	13.46
20%-40%	22,931	62.65	76.11
40%-60%	7,025	19.19	95.30
60%-80%	977	2.67	97.97
> 80%	743	2.03	100.00
Total	36,603	100.00	

Figure 6. MHC as a Percent of MHI by Census Block Group



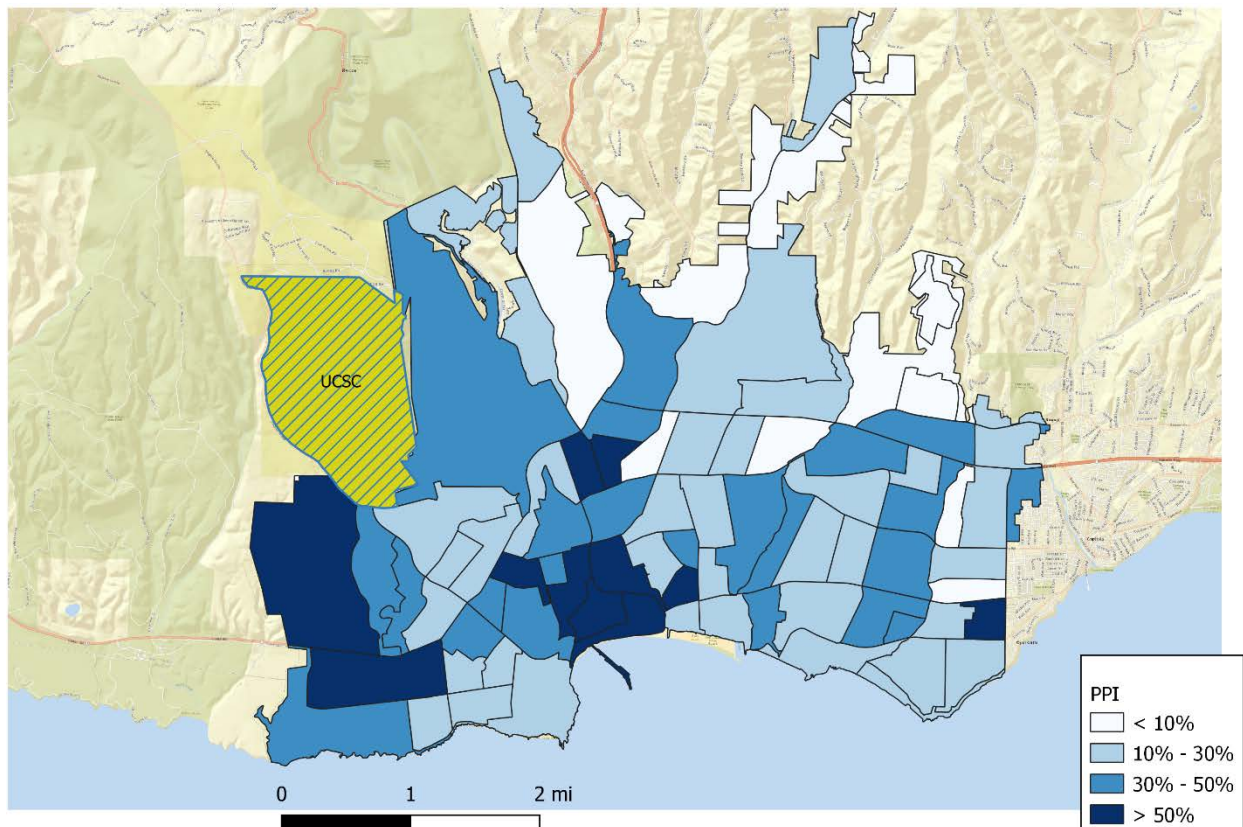
Poverty Prevalence

Table 7 and Figure 7 show the distribution of households by poverty prevalence indicator (PPI). This shows the percentage of households in each block group with incomes less than 200% of FPL. Approximately 15% of households served by the Water Department are located in census block groups where more than 50% of households have incomes less than 200% of FPL. Households in these census block groups may be significantly more likely to struggle with meeting basic living expenses after paying for housing costs.

Table 7. Number of Households by Poverty Prevalence

PPI Level	Freq.	Percent	Cum.
< 10%	3,348	9.15	9.15
10% - 30%	16,247	44.39	53.53
30% - 50%	11,414	31.18	84.72
> 50%	5,594	15.28	100.00
Total	36,603	100.00	

Figure 7. Poverty Prevalence Indicator by Census Block Group



Affordability Ratios

Table 8 and Figure 8 show the affordability ratios for water service. The average affordability ratio for the service area is 1.3%. Approximately 5% of households served by the Water Department are located in census block groups with a water service affordability ratio greater than 2.5%. Recall that 2.5% of MHI is a commonly used benchmark for assessing water service affordability. Approximately 13% of households are located in census block groups with a water service affordability ratio greater than 2.0%. Because we have adjusted MHI for housing cost, the 2% and 2.5% thresholds provide conservative benchmarks for assessing affordability.

Table 8. Number of Households by Water Service Affordability Ratio

Water Service AR	Freq.	Percent	Cum.
< 0.5%	2,612	7.14	7.14
0.5% - 1.0%	19,883	54.32	61.46
1.0% - 1.5%	6,186	16.90	78.36
1.5% - 2.0%	3,273	8.94	87.30
2.0% - 2.5%	2,625	7.17	94.47
> 2.5%	2,024	5.53	100.00
Total	36,603	100.00	

Figure 8. Water Service Affordability Ratio by Census Block Group

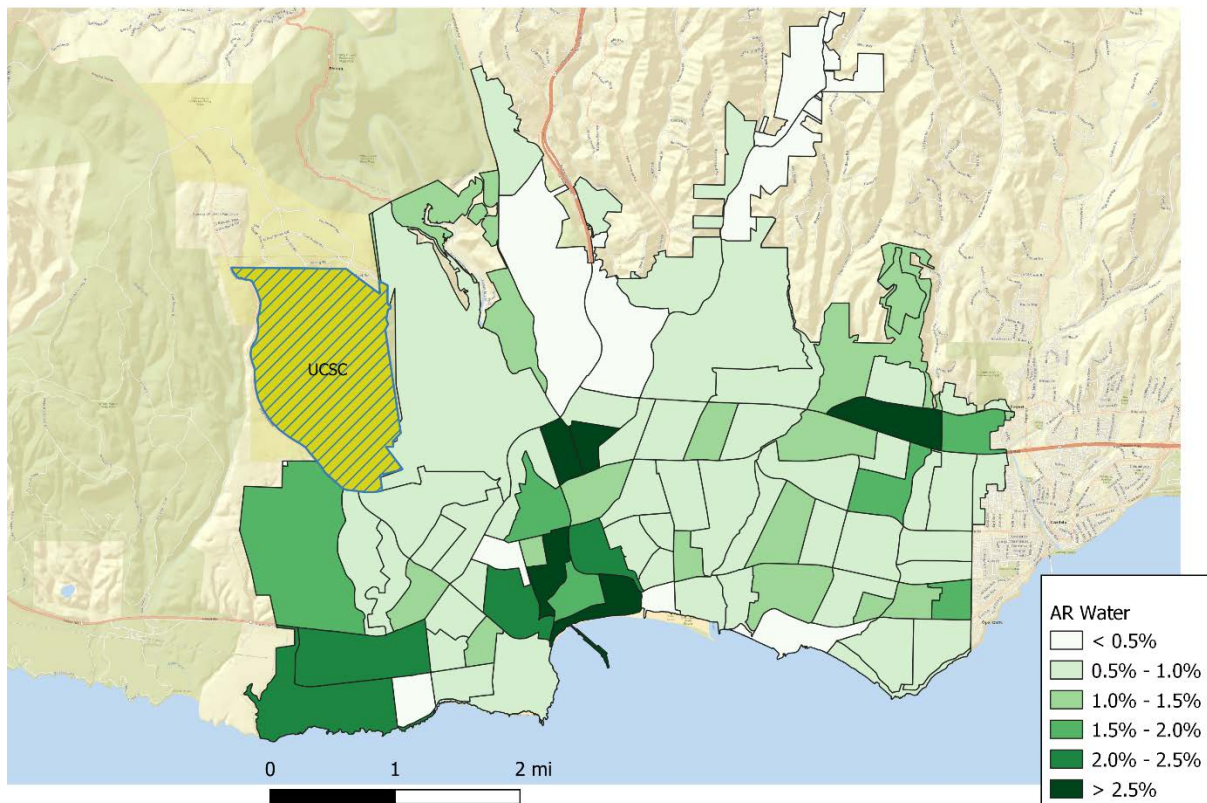
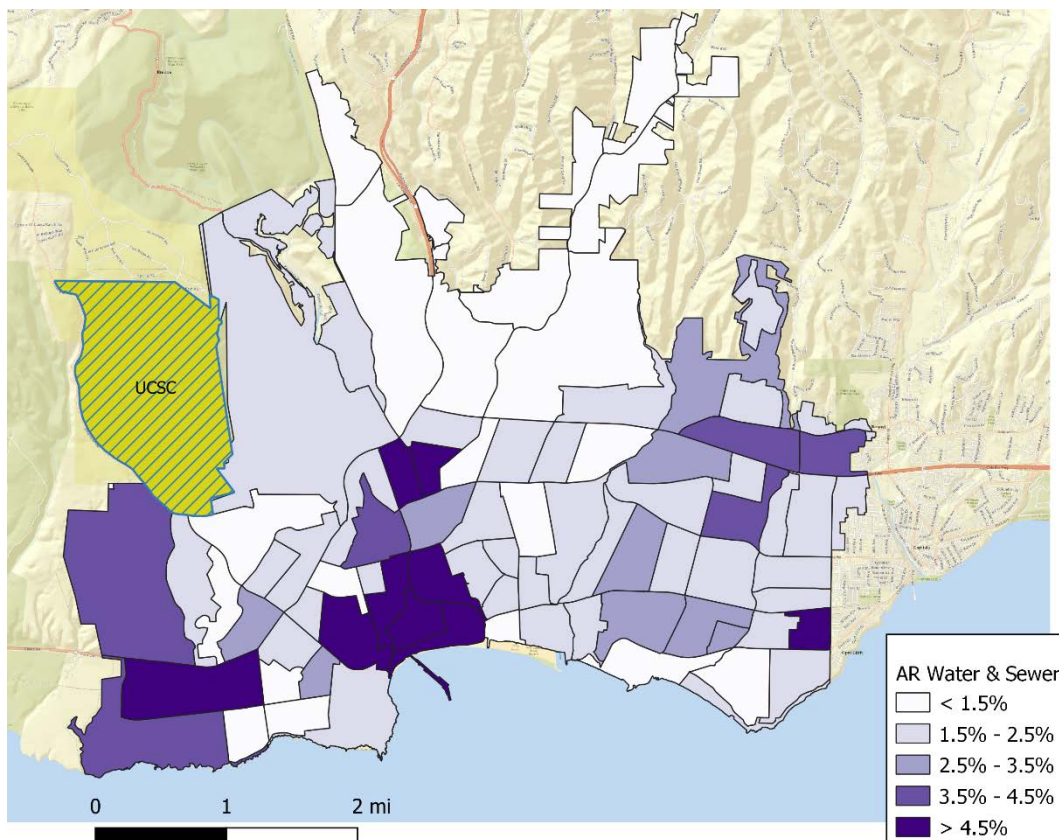


Table 9 and Figure 9 show the affordability ratios for combined water and sewer service. The average for the service area is 2.9%. Approximately 14% of households are located in census block groups with a combined water and sewer service affordability ratio greater than 4.5%. Recall that 4.5% of MHI is a commonly used benchmark for assessing combined water and sewer service affordability. Again we note that because we have adjusted MHI for housing cost, the 4.5% threshold provides conservative benchmark for assessing affordability. As a rule of thumb, Teodoro (2018) recommended a 10% threshold for his proposed affordability ratio. However, this is too high for the metric we are using for two reasons. First, Teodoro’s ratio is based on 20th percentile income whereas ours uses median income. Second, Teodoro’s ratio uses disposable income whereas ours adjusts income only for housing costs.

Table 9. Number of Households by Combined Water & Sewer Service Affordability Ratio

W & S AR	Freq.	Percent	Cum.
< 1.5%	7,302	19.95	19.95
1.5% - 2.5%	16,383	44.76	64.71
2.5% - 3.5%	4,996	13.65	78.36
3.5% - 4.5%	2,955	8.07	86.43
> 4.5%	4,967	13.57	100.00
Total	36,603	100.00	

Figure 9. Combined Water & Sewer Service Affordability Ratio by Census Block Group



Water & Sewer Service Financial Burden Matrix

Table 10 repeats the Water & Sewer Service Financial Burden Matrix from Table 1. Recall that it is based on a similar approach in Raucher et al. (2019) which uses an affordability metric in conjunction with poverty prevalence to assess the likely level of financial burden of water and sewer service. Table 11 shows the number households falling into each cell in the financial burden matrix. Table 12 tallies up these counts by burden level. This analysis indicates that approximately 79% of households served by the Water Department are located in census block groups where the expected financial burden of water and sewer service is scored moderate or better. Approximately 16% of households are located in census block groups where the expected financial burden is scored high due to the combination of high AR and high PPI. The census block groups in which these households are located are shown in Figure 10.

Table 10. Water & Sewer Service Financial Burden Matrix

AR _{W&S}	Poverty Prevalence Indicator (PPI)			
	< 10%	10 – 30%	30 – 50%	> 50%
< 1.5%	Low	Low	Low-Moderate	Low-Moderate
1.5% - 2.5%	Low	Low-Moderate	Moderate	Moderate
2.5% - 3.5%	Low-Moderate	Moderate	Moderate	Moderate-High
3.5% - 4.5%	Moderate	Moderate	Moderate-High	High
> 4.5%	Moderate-High	Moderate-High	High	High

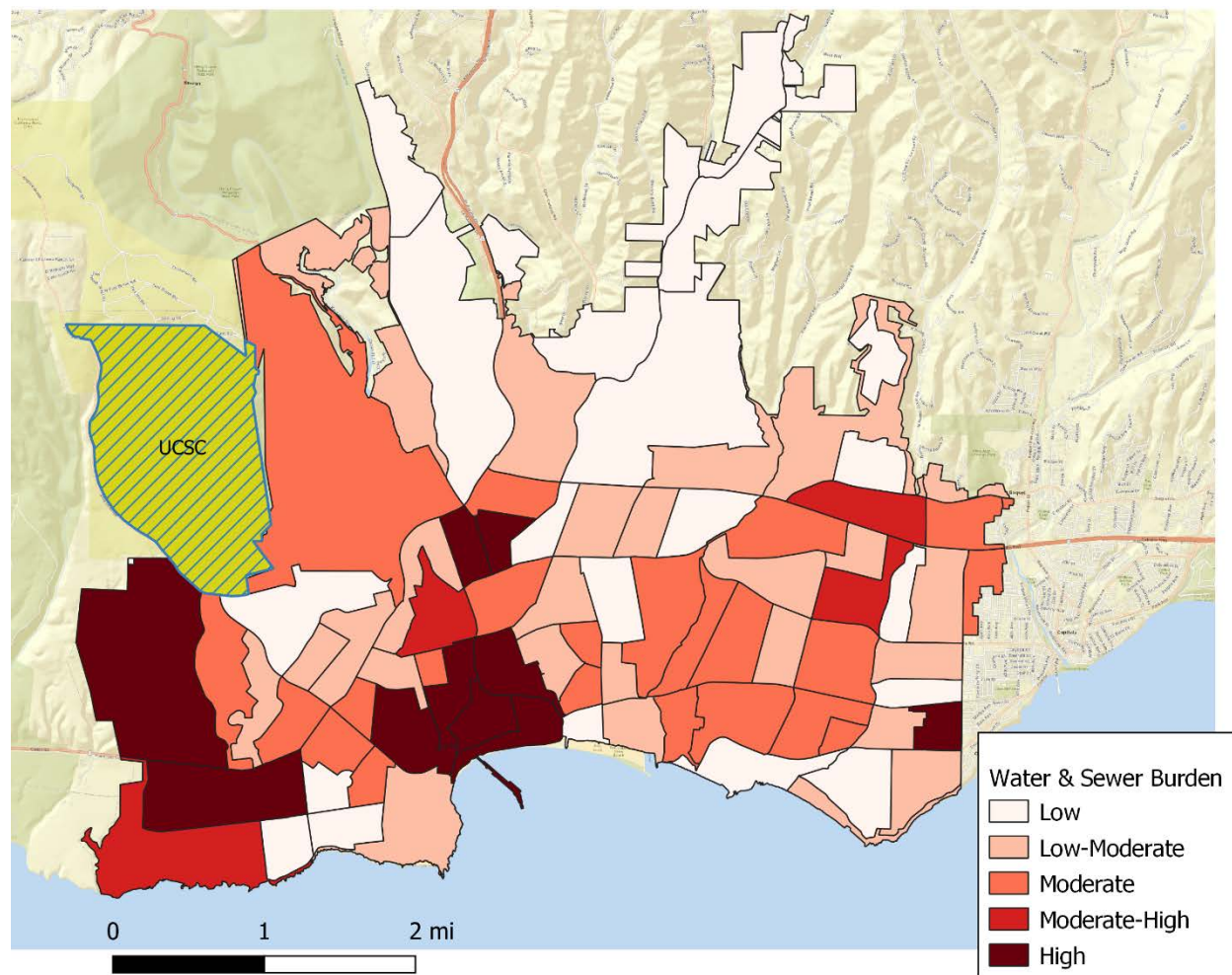
Table 11. Number of Households by Water & Sewer AR and PPI Level

W & S AR	PPI Level				Total
	< 10%	10% - 30%	30% - 50%	> 50%	
< 1.5%	1,333	4,782	898	289	7,302
1.5% - 2.5%	1,243	8,800	5,924	416	16,383
2.5% - 3.5%	772	2,484	1,740		4,996
3.5% - 4.5%		181	1,880	894	2,955
> 4.5%			972	3,995	4,967
Total	3,348	16,247	11,414	5,594	36,603

Table 12. Number of Households by Water & Sewer Service Burden

W&S Financial Burden	Freq.	Percent	Cum.
Low	7,358	20.10	20.10
Low-Moderate	10,759	29.39	49.50
Moderate	10,745	29.36	78.85
Moderate-High	1,880	5.14	83.99
High	5,861	16.01	100.00
Total	36,603	100.00	

Figure 10. Water & Sewer Financial Burden by Census Block Group



Summary

The primary results of this analysis include the following:

- Essential water and sewer service in Santa Cruz remain affordable for most Water Department customers. The water service only affordability ratio for the entire service area is 1.3% of adjusted MHI, which is well below conventional thresholds for water service affordability. The water and sewer service affordability ratio for the entire service area is 2.9% of adjusted MHI, also well below conventional thresholds for combined water and sewer service costs.
- Approximate 6% of households served by the Water Department are located in census block groups with affordability ratios for water service greater than 2.5% while approximately 14% are in census block groups with affordability ratios for combined water and sewer service greater than 4.5%. For these households, water and sewer service costs may constitute a financial

burden.

- Approximately 16% of households are located in census block groups where the financial burden of the combined costs of water and sewer service is scored high due to both high affordability ratios and high poverty prevalence. These customers are most likely to struggle with meeting basic living expenses, of which water and sewer service are a part.

References

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- Stratus Consulting (2013). Affordability Assessment Tool for Federal Water Mandates. Report prepared for United States Conference of Mayors, American Water Works Association, and Water Environment Federation.
- Teodoro, Manuel P. (2018). Measuring Household Affordability for Water and Sewer Utilities. Journal AWWA, January 2018, 110:1.

Water/Sewer Service Affordability Analysis

Attachment A

Census block group data set

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burden Score
60871001001	301	100%	4	50.52	\$40-\$60	100.35	100.352	> \$100	\$100-\$150k	2,380	19.7%	< 20%	28%	10% - 30%	0.5%	0.5% - 1.0%	1.0%	< 1.5%	Low
60871001002	518	100%	4	50.49	\$40-\$60	100.28	100.284	> \$100	\$75-\$100k	2,380	29.0%	20%-40%	15%	10% - 30%	0.9%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871002001	242	100%	4	49.99	\$40-\$60	99.27	99.2738	\$75-\$100	\$100-\$150k	1,816	19.7%	< 20%	9%	< 10%	0.7%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871002002	353	100%	3	39.53	\$20-\$40	87.92	87.922	\$75-\$100	\$50-\$75k	1,816	34.0%	20%-40%	22%	10% - 30%	1.1%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871002003	548	100%	3.5	44.10	\$40-\$60	92.38	92.3801	\$75-\$100	\$75-\$100k	1,816	26.3%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Low-Moderate
60871002004	295	100%	3	39.39	\$20-\$40	87.80	87.8008	\$75-\$100	\$100-\$150k	1,816	18.9%	< 20%	4%	< 10%	0.5%	0.5% - 1.0%	1.1%	< 1.5%	Low
60871002005	528	100%	2.71	33.41	\$20-\$40	79.43	79.4301	\$75-\$100	\$50-\$75k	1,816	31.9%	20%-40%	36%	30% - 50%	0.9%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Moderate
60871002006	435	100%	3.75	41.49	\$40-\$60	85.21	85.2059	\$75-\$100	< \$50k	1,816	64.4%	60%-80%	54%	> 50%	4.0%	> 2.5%	7.8%	> 4.5%	High
60871002007	240	100%	3	38.55	\$20-\$40	86.29	86.293	\$75-\$100	< \$50k	1,816	64.7%	60%-80%	59%	> 50%	3.7%	> 2.5%	8.0%	> 4.5%	High
60871003001	962	59%	3.21	38.18	\$20-\$40	82.79	90.8962	\$75-\$100	\$75-\$100k	1,965	28.9%	20%-40%	39%	30% - 50%	0.8%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Moderate
60871003002	634	100%	4	50.35	\$40-\$60	100.05	100.052	> \$100	\$100-\$150k	1,965	19.6%	< 20%	13%	10% - 30%	0.6%	0.5% - 1.0%	1.2%	< 1.5%	Low
60871004001	4	0%	3.5	49.64	\$40-\$60	95.54	115.418	> \$100	> \$150k	1,575	11.9%	< 20%	10%	< 10%	0.4%	< 0.5%	1.0%	< 1.5%	Low
60871005001	479	100%	4.04	47.68	\$40-\$60	94.76	94.7602	\$75-\$100	\$100-\$150k	2,156	22.7%	20%-40%	32%	30% - 50%	0.6%	0.5% - 1.0%	1.3%	< 1.5%	Low-Moderate
60871005002	823	100%	4.44	51.50	\$40-\$60	98.64	98.6434	\$75-\$100	\$75-\$100k	2,156	29.5%	20%-40%	48%	30% - 50%	1.0%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Moderate
60871005003	894	98%	3.8	46.04	\$40-\$60	93.38	93.8503	\$75-\$100	\$50-\$75k	2,156	47.8%	40%-60%	50%	> 50%	1.9%	1.5% - 2.0%	3.8%	3.5% - 4.5%	High
60871006001	540	100%	4	48.97	\$40-\$60	96.76	96.7643	\$75-\$100	\$100-\$150k	2,251	27.0%	20%-40%	28%	10% - 30%	0.8%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871006002	454	100%	3.5	44.67	\$40-\$60	93.28	93.2804	\$75-\$100	\$50-\$75k	2,251	40.0%	40%-60%	18%	10% - 30%	1.3%	1.0% - 1.5%	2.7%	2.5% - 3.5%	Moderate
60871006003	283	100%	4	50.12	\$40-\$60	99.39	99.3882	\$75-\$100	\$100-\$150k	2,251	26.6%	20%-40%	27%	10% - 30%	0.8%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871007001	476	100%	3	34.45	\$20-\$40	78.58	78.5756	\$75-\$100	\$50-\$75k	1,409	24.3%	20%-40%	27%	10% - 30%	0.8%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Low-Moderate
60871007002	513	100%	2.68	30.06	\$20-\$40	73.29	73.2928	\$50-\$75	< \$50k	1,409	45.3%	40%-60%	44%	30% - 50%	1.7%	1.5% - 2.0%	4.1%	3.5% - 4.5%	Moderate-High
60871008001	514	100%	2.88	35.63	\$20-\$40	81.19	81.1921	\$75-\$100	\$75-\$100k	1,789	25.8%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871008002	416	100%	2.75	34.97	\$20-\$40	81.20	81.2048	\$75-\$100	\$75-\$100k	1,789	26.6%	20%-40%	51%	> 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871008003	472	100%	2.85	32.16	\$20-\$40	75.72	75.7215	\$75-\$100	\$50-\$75k	1,789	41.1%	40%-60%	37%	30% - 50%	1.2%	1.0% - 1.5%	2.9%	2.5% - 3.5%	Moderate
60871008004	734	100%	3.06	35.49	\$20-\$40	79.34	79.3365	\$75-\$100	< \$50k	1,789	54.3%	40%-60%	58%	> 50%	2.3%	2.0% - 2.5%	5.0%	> 4.5%	High
60871008005	445	100%	3	37.25	\$20-\$40	83.06	83.0592	\$75-\$100	\$50-\$75k	1,789	31.9%	20%-40%	15%	10% - 30%	1.0%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Low-Moderate
60871008006	285	100%	3	38.36	\$20-\$40	85.18	85.1803	\$75-\$100	\$50-\$75k	1,789	31.5%	20%-40%	36%	30% - 50%	1.0%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Moderate

Water/Sewer Service Affordability Analysis

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burden Score
60871009001	562	100%	3	37.41	\$20-\$40	84.44	84.4393	\$75-\$100	\$75-\$100k	1,976	29.4%	20%-40%	39%	30% - 50%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Moderate
60871009002	825	100%	2.37	28.77	\$20-\$40	73.15	73.15	\$50-\$75	\$75-\$100k	1,976	27.9%	20%-40%	22%	10% - 30%	0.6%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871009003	270	100%	3	37.90	\$20-\$40	84.03	84.0338	\$75-\$100	\$50-\$75k	1,976	36.9%	20%-40%	28%	10% - 30%	1.1%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871009004	340	100%	2.27	29.22	\$20-\$40	75.04	75.0391	\$75-\$100	\$50-\$75k	1,976	31.9%	20%-40%	14%	10% - 30%	0.7%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871009005	304	100%	2	27.17	\$20-\$40	73.46	73.4647	\$50-\$75	\$100-\$150k	1,976	22.8%	20%-40%	18%	10% - 30%	0.4%	< 0.5%	1.1%	< 1.5%	Low
60871010001	743	100%	3.15	33.71	\$20-\$40	76.14	76.1393	\$75-\$100	< \$50k	1,438	83.7%	> 80%	79%	> 50%	10.8%	> 2.5%	21.4%	> 4.5%	High
60871010002	320	100%	3.2	36.65	\$20-\$40	80.36	80.3647	\$75-\$100	\$50-\$75k	1,438	28.9%	20%-40%	44%	30% - 50%	1.0%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Moderate
60871010003	289	100%	3.75	46.36	\$40-\$60	94.02	94.0239	\$75-\$100	\$100-\$150k	1,438	12.9%	< 20%	52%	> 50%	0.5%	< 0.5%	1.0%	< 1.5%	Low-Moderate
60871010004	302	100%	3.09	33.81	\$20-\$40	76.15	76.1489	\$75-\$100	< \$50k	1,438	73.8%	60%-80%	94%	> 50%	6.2%	> 2.5%	13.0%	> 4.5%	High
60871010005	223	100%	3	39.60	\$20-\$40	88.08	88.0788	\$75-\$100	\$75-\$100k	1,438	20.5%	20%-40%	49%	30% - 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871010006	972	100%	3.94	42.04	\$40-\$60	84.97	84.969	\$75-\$100	< \$50k	1,438	44.7%	40%-60%	50%	30% - 50%	2.3%	2.0% - 2.5%	4.6%	> 4.5%	High
60871010007	671	100%	2.36	26.65	\$20-\$40	69.34	69.3365	\$50-\$75	< \$50k	1,438	50.9%	40%-60%	52%	> 50%	1.9%	1.5% - 2.0%	4.8%	> 4.5%	High
60871011001	412	100%	4	49.97	\$40-\$60	99.02	99.0215	\$75-\$100	\$100-\$150k	2,336	24.6%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871011002	420	100%	2.5	32.63	\$20-\$40	79.85	79.845	\$75-\$100	\$50-\$75k	2,336	48.0%	40%-60%	22%	10% - 30%	1.3%	1.0% - 1.5%	3.1%	2.5% - 3.5%	Moderate
60871011003	320	100%	4	50.19	\$40-\$60	99.60	99.6022	\$75-\$100	\$100-\$150k	2,336	23.4%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871011004	814	100%	3.73	45.95	\$40-\$60	93.88	93.881	\$75-\$100	\$100-\$150k	2,336	27.8%	20%-40%	20%	10% - 30%	0.8%	0.5% - 1.0%	1.5%	1.5% - 2.5%	Low-Moderate
60871011005	363	100%	3	39.81	\$20-\$40	88.68	88.6848	\$75-\$100	\$75-\$100k	2,336	29.1%	20%-40%	50%	30% - 50%	0.7%	0.5% - 1.0%	1.5%	1.5% - 2.5%	Moderate
60871012001	396	100%	3.38	39.05	\$20-\$40	84.40	84.3963	\$75-\$100	< \$50k	1,833	50.7%	40%-60%	68%	> 50%	2.1%	2.0% - 2.5%	4.5%	> 4.5%	High
60871012002	399	100%	3	40.13	\$40-\$60	89.45	89.4513	\$75-\$100	\$100-\$150k	1,833	16.8%	< 20%	13%	10% - 30%	0.4%	< 0.5%	1.0%	< 1.5%	Low
60871012003	523	100%	6	77.67	> \$60	124.41	124.406	> \$100	\$50-\$75k	1,833	36.8%	20%-40%	32%	30% - 50%	2.4%	2.0% - 2.5%	3.8%	3.5% - 4.5%	Moderate-High
60871202001	39	0%	4	54.45	\$40-\$60	100.94	120.844	> \$100	\$75-\$100k	1,688	22.9%	20%-40%	31%	30% - 50%	0.9%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Moderate
60871207003	144	0%	5	69.08	> \$60	119.33	139.396	> \$100	\$75-\$100k	1,915	25.1%	20%-40%	12%	10% - 30%	1.2%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871208002	244	0%	4	57.59	\$40-\$60	107.79	127.857	> \$100	> \$150k	2,118	16.1%	< 20%	12%	10% - 30%	0.5%	0.5% - 1.0%	1.1%	< 1.5%	Low
60871208003	583	26%	3	43.84	\$40-\$60	92.91	107.677	> \$100	> \$150k	2,118	15.4%	< 20%	5%	< 10%	0.4%	< 0.5%	0.9%	< 1.5%	Low
60871211002	253	0%	2.53	29.37	\$20-\$40	70.89	90.5753	\$75-\$100	\$75-\$100k	1,682	26.4%	20%-40%	26%	10% - 30%	0.6%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871212001	34	0%	4.5	61.53	> \$60	109.59	129.567	> \$100	> \$150k	2,534	16.3%	< 20%	15%	10% - 30%	0.5%	< 0.5%	1.0%	< 1.5%	Low
60871212003	162	37%	4	54.40	\$40-\$60	103.70	116.294	> \$100	\$100-\$150k	2,534	23.1%	20%-40%	10%	< 10%	0.6%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871212004	47	0%	3.33	47.46	\$40-\$60	94.43	114.36	> \$100	> \$150k	2,534	19.5%	< 20%	9%	< 10%	0.5%	< 0.5%	1.1%	< 1.5%	Low
60871212005	419	84%	4	50.96	\$40-\$60	100.37	103.559	> \$100	> \$150k	2,534	18.0%	< 20%	30%	30% - 50%	0.4%	< 0.5%	0.9%	< 1.5%	Low-Moderate

Water/Sewer Service Affordability Analysis

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burden Score
60871213001	772	0%	4	51.32	\$40-\$60	96.68	116.533	> \$100	\$50-\$75k	2,131	35.3%	20%-40%	9%	< 10%	1.3%	1.0% - 1.5%	2.9%	2.5% - 3.5%	Low-Moderate
60871213002	232	0%	5	69.12	> \$60	119.62	139.696	> \$100	\$100-\$150k	2,131	25.6%	20%-40%	5%	< 10%	1.1%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Low
60871213003	377	0%	3.88	52.52	\$40-\$60	99.36	119.28	> \$100	\$100-\$150k	2,131	24.0%	20%-40%	5%	< 10%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low
60871213004	304	0%	5.57	77.56	> \$60	120.34	140.083	> \$100	\$50-\$75k	2,131	41.4%	40%-60%	38%	30% - 50%	2.5%	> 2.5%	4.4%	3.5% - 4.5%	Moderate-High
60871214011	401	0%	3.25	43.01	\$40-\$60	88.16	108.011	> \$100	\$50-\$75k	1,903	36.0%	20%-40%	43%	30% - 50%	1.3%	1.0% - 1.5%	3.1%	2.5% - 3.5%	Moderate
60871214012	560	0%	4	55.22	\$40-\$60	103.11	123.076	> \$100	\$100-\$150k	1,903	21.4%	20%-40%	19%	10% - 30%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871214021	540	0%	4	52.11	\$40-\$60	97.01	116.844	> \$100	\$50-\$75k	1,819	41.2%	40%-60%	33%	30% - 50%	2.0%	1.5% - 2.0%	4.3%	3.5% - 4.5%	Moderate-High
60871214022	791	0%	3.37	44.58	\$40-\$60	89.70	109.541	> \$100	\$75-\$100k	1,819	25.7%	20%-40%	36%	30% - 50%	0.8%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Moderate
60871214023	228	0%	4.25	55.10	\$40-\$60	101.20	121.093	> \$100	\$75-\$100k	1,819	22.2%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871214031	800	0%	3.31	43.23	\$40-\$60	88.17	108.013	> \$100	\$50-\$75k	1,788	35.9%	20%-40%	26%	10% - 30%	1.3%	1.0% - 1.5%	3.3%	2.5% - 3.5%	Moderate
60871214032	338	0%	3.96	52.63	\$40-\$60	99.00	118.895	> \$100	\$75-\$100k	1,788	22.4%	20%-40%	11%	10% - 30%	0.8%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871214033	272	0%	4	50.73	\$40-\$60	95.34	115.167	> \$100	\$100-\$150k	1,788	20.2%	20%-40%	41%	30% - 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871215001	533	0%	2	32.00	\$20-\$40	79.51	99.4638	\$75-\$100	\$100-\$150k	1,453	15.6%	< 20%	22%	10% - 30%	0.4%	< 0.5%	1.3%	< 1.5%	Low
60871215002	537	0%	3	40.83	\$40-\$60	86.28	106.138	> \$100	\$50-\$75k	1,453	26.0%	20%-40%	45%	30% - 50%	1.0%	0.5% - 1.0%	2.5%	2.5% - 3.5%	Moderate
60871215003	810	0%	3.69	43.81	\$40-\$60	86.01	105.728	> \$100	\$50-\$75k	1,453	32.2%	20%-40%	29%	10% - 30%	1.4%	1.0% - 1.5%	3.3%	2.5% - 3.5%	Moderate
60871215004	585	0%	2	31.62	\$20-\$40	78.25	98.0951	\$75-\$100	\$50-\$75k	1,453	27.4%	20%-40%	33%	30% - 50%	0.8%	0.5% - 1.0%	2.5%	1.5% - 2.5%	Moderate
60871215005	330	0%	4.61	54.86	\$40-\$60	97.39	117.119	> \$100	\$50-\$75k	1,453	26.6%	20%-40%	42%	30% - 50%	1.4%	1.0% - 1.5%	2.8%	2.5% - 3.5%	Moderate
60871216001	391	0%	3.5	46.09	\$40-\$60	91.18	111.023	> \$100	\$50-\$75k	1,499	25.5%	20%-40%	26%	10% - 30%	1.0%	1.0% - 1.5%	2.5%	1.5% - 2.5%	Low-Moderate
60871216002	127	0%	2	33.35	\$20-\$40	81.89	101.885	> \$100	\$75-\$100k	1,499	19.7%	< 20%	15%	10% - 30%	0.5%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871216003	1007	0%	3	41.33	\$40-\$60	87.14	107.013	> \$100	\$50-\$75k	1,499	24.8%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	2.3%	1.5% - 2.5%	Low-Moderate
60871216004	776	0%	2.96	42.04	\$40-\$60	88.87	108.786	> \$100	\$100-\$150k	1,499	15.6%	< 20%	21%	10% - 30%	0.5%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871216005	474	0%	2.74	33.07	\$20-\$40	75.46	95.1881	\$75-\$100	< \$50k	1,499	47.7%	40%-60%	62%	> 50%	2.0%	1.5% - 2.0%	5.5%	> 4.5%	High
60871217001	154	0%	2.54	34.03	\$20-\$40	79.04	98.8784	\$75-\$100	\$75-\$100k	1,829	26.4%	20%-40%	30%	30% - 50%	0.7%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Moderate
60871217002	258	0%	3.79	51.47	\$40-\$60	98.55	118.481	> \$100	\$75-\$100k	1,829	25.0%	20%-40%	27%	10% - 30%	0.9%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Low-Moderate
60871217003	315	0%	4.23	55.25	\$40-\$60	101.34	121.232	> \$100	\$100-\$150k	1,829	20.6%	20%-40%	0%	< 10%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low
60871217005	393	0%	4.65	60.54	> \$60	106.59	126.48	> \$100	\$75-\$100k	1,829	23.0%	20%-40%	28%	10% - 30%	1.0%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Low-Moderate
60871217006	319	0%	4.23	53.22	\$40-\$60	97.66	117.476	> \$100	\$100-\$150k	1,829	20.5%	20%-40%	3%	< 10%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low
60871220034	17	0%	4	54.21	\$40-\$60	99.30	119.144	> \$100	\$75-\$100k	1,968	26.9%	20%-40%	33%	30% - 50%	1.0%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Moderate
60871220035	181	0%	3.54	41.15	\$40-\$60	82.96	102.659	> \$100	\$50-\$75k	1,968	44.5%	40%-60%	21%	10% - 30%	1.6%	1.5% - 2.0%	4.0%	3.5% - 4.5%	Moderate

