

Appendix D

M-Cubed: Water Service Affordability Metrics Report

Water Service Affordability Metrics Report

Supporting the

Application of San Jose Water Company (U 168 W)

for Approval of Cost Recovery

for PFAS Remediation

Prepared by

M.Cubed

March 20, 2026



Contents

1	Introduction	1
2	Residential Bills at Average and Essential Service Levels	2
3	Prevailing Minimum Wage	2
4	CPUC Affordability Ratio Calculator	3
5	Affordability Metric Results	4
5.1	HM under Current and Proposed Rates	4
5.2	AR under Current and Proposed Rates	6
6	Discussion	7

1 Introduction

San Jose Water Company (“San Jose Water” or “Company”) has filed an application with the California Public Utilities Commission (“Commission”) seeking authorization to recover the costs associated with its Polyfluoroalkyl Substances (“PFAS”) Compliance Program. This program is necessary to ensure compliance with newly established state and federal drinking water standards, including Maximum Contaminant Levels for PFAS compounds, and to maintain the continued provision of safe and reliable water service to customers.

The proposed PFAS remediation investments—most notably the construction of treatment facilities at the Williams Station—represent a significant capital undertaking with associated ongoing operation and maintenance costs. As reflected in the application, recovery of these costs will result in incremental increases in customer rates over the 2027–2031 period.

Consistent with Decision 22-08-023, which established a standardized framework for evaluating utility service affordability, this report presents an assessment of the affordability impacts associated with the proposed rate changes. Specifically, the report evaluates three Commission-adopted affordability metrics: (1) Affordability Ratio at the 20th percentile income level (AR20), (2) Affordability Ratio at the 50th percentile income level (AR50), and (3) Hours at Minimum Wage (HM). These metrics measure the relationship between water service costs and household financial capacity, providing insight into the potential burden of rate changes across different income levels.

The analysis compares affordability outcomes under current rates and under proposed rates that incorporate PFAS remediation cost recovery for the years 2027 through 2031. The AR20 and AR50 metrics are presented for the years 2027 through 2030, consistent with the range supported by the Commission’s affordability ratio calculator, while the Hours at Minimum Wage metric is presented for the full 2027 through 2031 period. Metrics are provided for both average and essential levels of water use, consistent with Commission guidance and prior reporting practices.

The purpose of this report is to inform the Commission’s consideration of whether the proposed rate increases are reasonable in light of affordability impacts, and to support the evaluation of the application under the Commission’s affordability and Environmental and Social Justice policies.

2 Residential Bills at Average and Essential Service Levels

Residential bills at average and essential service levels were provided by San Jose Water for both current and proposed rates. The average monthly residential usage level is 10 centum cubic feet (“CCF”), while the essential usage level is 6 CCF, consistent with Decision 22-08-023. These bill amounts are summarized in Table 1 and serve as the basis for the affordability metric calculations.

At the average usage level, the proposed PFAS-related rate adjustments result in monthly bill increases ranging from \$0.83 to \$2.86 over the 2028–2030 period, with no change in 2027 and a smaller increase in 2031. At the essential usage level, the pattern is similar, with monthly bill increases ranging from \$0.65 to \$2.24 over the same period. In percentage terms, the increases range from 0.6 percent to 2.0 percent relative to current rates, with the largest increase occurring in 2029.

These relatively small changes in monthly bills provide the foundation for the affordability metric results presented in subsequent sections.

Table 1. Residential Bills at Average and Essential Service Levels

Residential Bill at Average Use (10 CCF)					
Rates	2027	2028	2029	2030	2031
Current	\$143.59	\$143.59	\$144.43	\$147.29	\$149.01
Proposed	\$143.59	\$144.43	\$147.29	\$149.01	\$149.36
Difference	\$0.00	\$0.83	\$2.86	\$1.72	\$0.35
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%

Residential Bill at Essential Service Level (6 CCF)					
Rates	2027	2028	2029	2030	2031
Current	\$113.35	\$113.35	\$114.00	\$116.24	\$117.58
Proposed	\$113.35	\$114.00	\$116.24	\$117.58	\$117.86
Difference	\$0.00	\$0.65	\$2.24	\$1.34	\$0.27
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%

3 Prevailing Minimum Wage

Prevailing minimum wage rates were compiled for the cities and unincorporated areas within San Jose Water’s service territory. All jurisdictions included in this analysis incorporate automatic annual adjustments tied to the Consumer Price Index (“CPI”). To account for this escalation, the

analysis applies the Consumer Price Index- for all Urban Consumers (“CPI-U”)¹ adjustment factors embedded in the Commission’s Affordability Ratio Calculator (“ARC”).

Because the ARC produces escalation factors only through 2030, the 2030 CPI-U adjustment factor is also applied to 2031 for purposes of this analysis. The prevailing and forecasted minimum wage rates are summarized in Table 2 and serve as the basis for calculating the Hours at Minimum Wage (“HM”) affordability metric.

As shown in Table 2, minimum wage levels are projected to increase steadily over the study period. These increases play an important role in the HM metric results, as rising wage levels offset a portion of the increases in water bills over time.

Table 2. Prevailing and Forecast Minimum Wage Rates by Jurisdiction

Jurisdiction	Prevailing 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Forecast 2031
San Jose	\$18.45	\$19.00	\$19.52	\$20.06	\$20.62	\$21.19
Cupertino	\$18.70	\$19.25	\$19.79	\$20.33	\$20.90	\$21.48
Campbell	\$16.90	\$17.40	\$17.88	\$18.38	\$18.89	\$19.41
Monte Sereno	\$16.90	\$17.40	\$17.88	\$18.38	\$18.89	\$19.41
Saratoga	\$16.90	\$17.40	\$17.88	\$18.38	\$18.89	\$19.41
Los Gatos	\$16.90	\$17.40	\$17.88	\$18.38	\$18.89	\$19.41
Unincorporated	\$16.90	\$17.40	\$17.88	\$18.38	\$18.89	\$19.41
CPI-U Escalator	1.000	1.030	1.028	1.028	1.028	1.028

4 CPUC Affordability Ratio Calculator

The Affordability Ratio (“AR”) at the 20th percentile income level (AR20) and at the 50th percentile income level (AR50) measures the cost of water service as a percentage of household income for representative low- and median-income households, respectively. In both cases, the metric is calculated as the ratio of the monthly water bill to household income net of housing costs and other essential utility expenses. AR20 reflects affordability conditions for lower-income households, while AR50 provides a benchmark for the broader population. These metrics are evaluated at both average and essential levels of water use.

Consistent with Commission requirements, AR20 and AR50 values in this report are calculated using the CPUC’s ARC. The ARC is a standardized tool that combines utility bill inputs with income,

¹ <https://www.bls.gov/cpi/overview.htm>

housing cost, and essential utility expenditure data derived from the U.S. Census Bureau's American Community Survey at the Public Use Microdata Area ("PUMA") level. The tool computes affordability metrics at the census tract level and aggregates results to broader geographic areas using population-weighted averages. This approach ensures that affordability metrics reflect regional variation in income and cost-of-living conditions within the service area.

The current version of the ARC (November 2024 draft) is based on a 2023 analysis year and includes embedded escalation factors for income, housing costs, and other inputs used to project affordability metrics over time. However, the calculator produces outputs only through 2030. Accordingly, AR20 and AR50 metrics in this analysis are presented for the years 2027 through 2030, consistent with the range supported by the ARC.

5 Affordability Metric Results

The affordability metrics for the average and essential service levels under the current and proposed rates are provided in this section. The HM metric results are provided first, followed by the AR metric results.

5.1 HM under Current and Proposed Rates

The HM metrics for average and essential service levels are summarized in Tables 3 and 4, respectively.

Across all jurisdictions, the proposed PFAS-related rate adjustments result in modest increases in the number of hours at minimum wage required to pay for monthly water service. At the average use level (10 CCF), HM values increase between 0.04 and 0.16 hours at their peak in 2029, corresponding to percentage increases of approximately 0.6 percent to 2.0 percent relative to current rates. Similar patterns are observed at the essential use level (6 CCF), where HM increases range from 0.04 to 0.12 hours at their peak.

In all cases, the incremental increases are small in absolute terms, generally amounting to a few minutes of additional work at minimum wage per month. The largest impacts occur in 2029, corresponding to the year with the highest incremental rate change, after which the differences decline in 2030 and 2031.

*Water Service Affordability Metrics Report Supporting the
Application of San Jose Water Company for PFAS Remediation Cost Recovery*

The overall trajectory of HM values declines over time under both current and proposed rates, reflecting projected increases in minimum wage levels that outpace growth in water bills. As a result, while the proposed rates modestly increase the HM metric relative to current rates, they do not materially alter the overall trend of improving affordability over the study period.

Table 3. HM Affordability Metric Results for the Average Service Level (10 CCF)

San Jose	2027	2028	2029	2030	2031
Current	7.56	7.36	7.20	7.14	7.03
Proposed	7.56	7.40	7.34	7.23	7.05
Difference	0.00	0.04	0.14	0.08	0.02
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%
Cupertino	2027	2028	2029	2030	2031
Current	7.46	7.26	7.10	7.05	6.94
Proposed	7.46	7.30	7.24	7.13	6.95
Difference	0.00	0.04	0.14	0.08	0.02
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%
Rest of Service Area	2027	2028	2029	2030	2031
Current	8.25	8.03	7.86	7.80	7.68
Proposed	8.25	8.08	8.02	7.89	7.69
Difference	0.00	0.05	0.16	0.09	0.02
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%

Table 4. HM Affordability Metric Results for the Essential Service Level (6 CCF)

San Jose	2027	2028	2029	2030	2031
Current	5.97	5.81	5.68	5.64	5.55
Proposed	5.97	5.84	5.79	5.70	5.56
Difference	0.00	0.03	0.11	0.06	0.01
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%
Cupertino	2027	2028	2029	2030	2031
Current	5.89	5.73	5.61	5.56	5.47
Proposed	5.89	5.76	5.72	5.63	5.49
Difference	0.00	0.03	0.11	0.06	0.01
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%
Rest of Service Area	2027	2028	2029	2030	2031
Current	6.51	6.34	6.20	6.15	6.06
Proposed	6.51	6.38	6.33	6.23	6.07
Difference	0.00	0.04	0.12	0.07	0.01
% Difference	0.0%	0.6%	2.0%	1.2%	0.2%

5.2 AR under Current and Proposed Rates

The AR20 and AR50 metrics for average and essential service levels are summarized in Tables 5 and 6, respectively.

Across both usage levels, the proposed PFAS-related rate adjustments result in very small increases in affordability ratios relative to current rates. At the average use level (10 CCF), AR20 increases by up to 0.15 percentage points at its peak in 2029, while AR50 increases by up to 0.03 percentage points. At the essential use level (6 CCF), AR20 increases by up to 0.11 percentage points and AR50 by up to 0.02 percentage points. In percentage terms, these changes range from approximately 0.6 percent to 2.0 percent relative to current rates.

As with the HM metric, the largest incremental impacts occur in 2029, corresponding to the year with the highest rate increase, with smaller differences in the surrounding years. Across all cases, the differences between current and proposed rates are small in absolute terms.

The overall pattern of AR values remains largely unchanged under the proposed rates. AR20 values remain in the range of approximately 7.4 to 7.6 percent at average use and 5.8 to 6.0 percent at essential use, while AR50 values remain in the range of approximately 1.5 percent at average use

and 1.2 percent at essential use. These results indicate that the proposed PFAS-related rate adjustments have a minimal effect on affordability outcomes as measured by the Commission's AR metrics.

Table 5. AR Affordability Metric Results for the Average Service Level (10 CCF)

AR20	2027	2028	2029	2030
Current	7.48%	7.41%	7.38%	7.57%
Proposed	7.48%	7.45%	7.53%	7.66%
% Difference	0.0%	0.6%	2.0%	1.2%
AR50	2027	2028	2029	2030
Current	1.54%	1.51%	1.49%	1.52%
Proposed	1.54%	1.52%	1.52%	1.54%
% Difference	0.0%	0.6%	2.0%	1.2%

Table 6. AR Affordability Metric Results for the Essential Service Level (6 CCF)

AR20	2027	2028	2029	2030
Current	5.90%	5.85%	5.83%	5.97%
Proposed	5.90%	5.88%	5.94%	6.04%
% Difference	0.0%	0.6%	2.0%	1.2%
AR50	2027	2028	2029	2030
Current	1.22%	1.19%	1.17%	1.20%
Proposed	1.22%	1.20%	1.20%	1.21%
% Difference	0.0%	0.6%	2.0%	1.2%

6 Discussion

The results presented in Section 5 indicate that the proposed PFAS-related rate adjustments have only a minimal effect on water service affordability across all three Commission-adopted metrics. For both average and essential service levels, the increases in monthly bills are modest, and the resulting changes in HM, AR20, and AR50 metrics are correspondingly small. In all cases, the largest impacts occur in 2029 and remain at or below two percent relative to current rates.

In absolute terms, the observed changes in affordability metrics are very small. For the HM metric, the increases amount to only a few minutes of additional work at minimum wage per month. For the AR metrics, the changes are on the order of one-tenth of a percentage point. These magnitudes indicate that the proposed rate adjustments do not materially alter the overall affordability profile of water service in the Company's service area.

It is also important to interpret these results in the context of the underlying data and methodology used to calculate the AR metrics. The Affordability Ratio Calculator relies on income, housing cost, and expenditure data derived from the American Community Survey at the PUMA level, which are subject to inherent sampling variability and model uncertainty. While the Commission has adopted this framework for consistency across proceedings, the precision of the resulting affordability estimates is necessarily limited by the resolution and statistical uncertainty of the underlying data.

In this context, the differences observed between current and proposed AR metrics—generally on the order of a tenth of a percentage point—are small relative to the likely margin of error associated with the estimates themselves. That is, the uncertainty inherent in the underlying data and modeling framework is likely an order of magnitude greater than the incremental changes attributable to the proposed PFAS-related rate adjustments.

Taken together, these findings indicate that while the proposed rate increases are measurable within the Commission’s affordability framework, their effect on affordability outcomes is minimal. The results are therefore consistent with the conclusion that the proposed PFAS Compliance Program can be implemented without materially affecting the affordability of water service for customers, while advancing the critical objective of maintaining safe and reliable drinking water supplies in compliance with state and federal standards.

Qualifications

David Mitchell

Education

MS, Agricultural and Natural Resource Economics, University of California, Berkeley, 1989

BS, Political Economy of Natural Resources, University of California, Berkeley, 1987

Years Experience

Thirty years of professional experience

Distinguishing Qualifications

- Founder and principal of economic consulting firm, M.Cubed
- Director of Research for the California Urban Water Conservation Council 1992-2007
- Thirty years of experience developing integrated water management plans for California's urban water suppliers
- Pioneered methods and analytical models now widely used to evaluate urban water conservation programs throughout California
- Lead economist for cost and finance studies of major environmental restoration initiatives, including the CALFED Bay-Delta Program, Bay Delta Conservation Plan, Lake Tahoe Environmental Improvement Program, and Santa Ana River HCP
- Extensive experience evaluating policies, programs, and natural phenomena impacting California's agricultural economy
- Adjunct Fellow Public Policy Institute of California

Relevant Experience

Mr. Mitchell has in-depth knowledge of the water supply, water quality and environmental management challenges confronting resource management agencies in the western United States. His practice areas include benefit-cost analysis, regional economic impact assessment, utility rate setting and financial planning, natural resource valuation, water demand forecasting, and water conservation program evaluation and planning. He has 30 years of experience using statistical and economic methods and models to help guide water resources management and investment decisions. He has been deeply involved in urban water conservation planning and evaluation since he became the California Urban Water Conservation Council's first Project Manager and Director of Research back in 1993. Serving for 15 years in this capacity, he has had a direct hand in shaping many of the policies and technical resources guiding urban conservation in California, including revisions to existing and creation of new urban water conservation Best Management

Practices (BMPs), development of BMP implementation guidebooks, cost-effectiveness guidelines and models, conservation rate guidelines, and design and oversight of numerous program evaluation studies. At the state level, he has provided economic modeling support to the California Water Fix, Bay Delta Conservation Plan, Delta Risk Management Strategy, CALFED Program. He has worked on numerous regional water planning efforts, including Sonoma County Water Agency's Fish Habitat Flows and Water Rights Project, EBMUD's 2040 Water Supply Master Plan, Contra Costa Water District's Future Water Supply Study Update, Sonoma County Water Agency's Water Supply, Transmission, and Reliability Project, and Metropolitan Water District's 2000 and 2005 Urban Water Management Plans. Mr. Mitchell has provided written and oral testimony in legal and regulatory proceedings concerned with the valuation and pricing of environmental resources. Water right valuations prepared by Mr. Mitchell have supported damage judgments in legal proceedings and have supported negotiated leases and sales of water.

Representative Projects

California Water Service 2021 General Rate Case Sales Forecast Testimony

California Water Service (2021-2022)

Prepared class-level sales forecasts for California Water Service's 24 service districts for Test Year 2023 and Forecast Years 2024 and 2025. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, passive and active conservation, and drought effects and recovery. The forecasts provided the basis for California Water Service's 2021 Rate Filing before the CPUC.

San Jose Water Company 2020 General Rate Case Sales Forecast Testimony

San Jose Water Company (2020-2021)

Prepared class-level sales forecasts for San Jose Water Company for Test Year 2022 and Forecast Years 2023 and 2024. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, passive and active conservation, and drought effects and recovery. The forecasts provided the basis for San Jose Water Company's 2020 Rate Filing before the CPUC.

California American 2019 General Rate Case Sales Forecast Testimony

San Jose Water Company (2019)

Prepared class-level sales forecasts for California American service areas for Test Year 2021 and Forecast Years 2022 and 2023. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, passive and active conservation, and drought effects and recovery. The forecasts provided the basis for California American's 2019 Rate Filing before the CPUC.

California Water Service 2018 General Rate Case Sales Forecast Testimony

California Water Service (2018)

Prepared class-level sales forecasts for California Water Service's 24 service districts for Test Year 2020 and Forecast Years 2021 and 2022. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, passive and active conservation, and drought effects and recovery. The forecasts provided the basis for California Water Service's 2018 Rate Filing before the CPUC.

Hawaii Water Service 2017 General Rate Case Conservation Program Testimony

Hawaii Water Service (2017)

Prepared district-level demand forecasts and conservation program designs, budget justifications, and staffing recommendations for the Ka'anapali and Waikoloa water service districts operated by Hawaii Water Service.

San Jose Water Company 2017 General Rate Case Sales Forecast Testimony

San Jose Water Company (2017)

Prepared class-level sales forecasts for San Jose Water Company for Test Year 2019 and Forecast Years 2020 and 2021. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, passive and active conservation, and drought effects and recovery. The forecasts provided the basis for San Jose Water Company's 2017 Rate Filing before the CPUC.

California Water Service 2015 General Rate Case Sales Forecast Testimony

California Water Service (2015)

Prepared class-level sales forecasts for California Water Service's 24 service districts for Test Year 2017 and Forecast Years 2018 and 2019. The forecasts are built up from forecasts of average use per customer and projections of total customers. The forecasts of average use per customer are derived from econometric models of average water use that account for the effects of climate and weather, strength of the economy, cost of water, and passive and active conservation. The forecasts provided the basis for California Water Service's 2015 Rate Filing before the CPUC.

California Water Service 2021 General Rate Case Conservation Program Testimony

California Water Service (2021)

Prepared district-level conservation program designs, budget justifications, and staffing recommendations for 24 water service districts operated by California Water Service.

California Water Service 2018 General Rate Case Conservation Program Testimony

California Water Service (2018)

Prepared district-level conservation program designs, budget justifications, and staffing recommendations for 24 water service districts operated by California Water Service.

California Water Service 2015 General Rate Case Conservation Program Testimony

California Water Service (2015)

Prepared district-level conservation program designs, budget justifications, and staffing recommendations for 24 water service districts operated by California Water Service.

California Water Service 2012 General Rate Case Conservation Program Testimony

California Water Service (2012)

Prepared district-level conservation program designs, budget justifications, and staffing recommendations for 24 water service districts operated by California Water Service.

Paying for Water in California

Public Policy Institute of California (2014)

Co-author of report on funding gaps in California's water management systems, including safe drinking water in small, disadvantaged communities, flood protection, ecosystem management, integrated water management, and stormwater and polluted runoff management. Identified magnitude of funding gaps in each management area and proposed policy reforms to address these gaps. Report download: <http://www.ppic.org/publication/paying-for-water-in-california/>

Building Drought Resilience in California's Cities and Suburbs

Public Policy Institute of California (2017)

Primary author of report examining California's cities and suburbs responses to recent droughts and local and state government's evolving roles in urban drought management. From a policy context, the report examines key areas for improving urban drought resilience, including coordinating water shortage contingency planning and implementation, fostering water system flexibility and integration, improving water supplier fiscal resilience, addressing water shortages in vulnerable communities and ecosystems, and balancing long-term water use efficiency and drought resilience. Report download: <http://www.ppic.org/publication/building-drought-resilience-californias-cities-suburbs/>

Managing Drought in a Changing Climate: Four Essential Reforms

Public Policy Institute of California (2018)

Co-author of report examining how hotter temperatures, shrinking snowpack, shorter and more intense wet seasons, and more volatile precipitation will stress the state's water management systems. The report provide a road map of essential reforms to prepare for and respond to droughts in California's changing climate. Key reforms include stronger drought planning, upgrades to state's water grid, improved water allocation rules, and development of new funding sources. Report download: <http://www.ppic.org/publication/managing-drought-in-a-changing-climate-four-essential-reforms/>

Model Design and Programming, Alliance for Water Efficiency Sales Forecasting and Rate Model

Alliance for Water Efficiency (2014)

With A&N Technical Services, developed the AWE Sales Forecasting and Rate Model, a new analytical tool that can explicitly model the effects of rate structures on urban water use. Typical water rate models assume that future sales are known with certainty, and do not respond to price, weather, the economy, or supply shortages – that is to say, not the world we live in. The AWE Sales Forecasting and Rate Model addresses this deficiency and enables analysis of the following: Customer Consumption Variability – weather, drought/shortage, or external shock;

Demand Response – Predicting future block sales (volume and revenue) with empirical price elasticities; Drought Pricing – Contingency planning for revenue neutrality; Probability Management – Risk theoretic simulation of revenue risks; Fiscal Sustainability – Sales forecasting over a 5 Year Time Horizon. Built in Excel with an extensive visual basic backend, the model's rate design and revenue simulation modules allow for a wide range of analyses of alternative rate designs.