2015 CALIFORNIA-NEVADA WATER AND WASTEWATER RATE SURVEY

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California-Nevada Section

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FOREWORD

The *2015 California-Nevada Water and Wastewater Rate Survey* is a joint effort between the California-Nevada Section of the American Water Works Association (CA-NV AWWA) and Raftelis Financial Consultants, Inc. (RFC). CA-NV AWWA is a nonprofit professional association dedicated to providing high-quality technical information to its water utility members and general public. RFC is a nationally recognized water and wastewater finance, rate, and management consulting firm. This survey was first conducted by RFC in 2005 to provide in-depth analysis of water rates and charges in the State of California. In 2007, CA-NV AWWA and RFC formed a partnership to produce the next edition of the rate survey including California and Nevada. The 2015 survey provides valuable insights into pricing practices embraced by utilities across California and Nevada. Specifically included in this year's survey:

- Participation by utility systems with diverse ownership and operating characteristics serving a total of 167 California agencies and 10 Nevada agencies
- Rate calculations and other pertinent data grouped by county and sorted by city
- Drought rates and surcharges for water agencies facing water supply shortages and mandatory conservation

It should be noted that the charges shown for each agency are determined by the agency to minimize errors.

The report is a powerful tool for comparative benchmarking. Drawing conclusions from rate comparisons, however, should be done only after evaluating several community characteristics (such as geography, climate, and service area, as well as the use of taxes, subsidies and grants). The determinants of utility rates are varied and complex and do not necessarily reflect the true cost of service. A low rate or a high rate does not necessarily mean that a utility is more or less efficient, respectively. As a result, the survey findings alone should not be used to judge the performance of any individual utility or to generalize about all water-sector utilities. Also, our rate survey uses a sample that is not statistically random. Even with these constraints, the information contained in the survey should be beneficial to utilities throughout California and Nevada. At a minimum, it can be used to identify utilities that have similar characteristics to include in a more in-depth benchmarking effort.

We recognize the valuable contribution made by the numerous water utility professionals who donated their time and energy to this effort. Their participation in this survey is greatly appreciated.

Timothy Worley, Ph.D.
Executive Director
California-Nevada Section, AWWA

Sudhir Pardiwala
Executive Vice President
Raftelis Financial Consultants, Inc.

FACTORS AFFECTING RATES

Utility rates are increasing at a pace faster than inflation; compounded with the drought and water shortages there is increasing public interest and political sensitivity to the rate setting process. In California, with the passing of Proposition 218 and the recent San Juan Capistrano court ruling, agencies are increasingly vulnerable to customer challenges in court. Agencies are struggling with controlling costs and reduced revenues from reduced sales. Increasing revenues from fixed charges is gaining importance to achieve greater revenue stability.

Factors impacting rate increases have not changed much over the last few years. However, reduced water sales has had a great impact on rates over the last couple of years and will continue to be a critical factor in the immediate future. Some of the factors that impact rates are described in the following.

WATER SHORTAGE

Water shortages are currently being experienced throughout California and Nevada as the region looks toward a fifth year of drought. In California, in particular, water agencies are facing mandatory water conservation from the State. Governor Brown's Executive Order B-29-15 on April 1 directed the State Water Resources Control Board (SWRCB) to develop agency-specific water consumption reductions to achieve a statewide 25 percent reduction in water use. Agencies across the state face reductions between eight and 36 percent. Shortages can also be caused by regulatory restrictions on accessing water or moving water through an aqueduct system. In addition, there is concern that climate change will reduce the winter snow pack in local mountains that serve as a natural storage system and exacerbate the duration and intensity of drought. Such water shortages typically have an adverse effect on the financial health of a utility, leading to increased pressure to raise rates. Decreases in water sales from restrictions are a major factor in rate increases over the last couple of years.

GROWING INFRASTRUCTURE REQUIREMENTS

Much of the original water and sewer infrastructure in California is close to or has exceeded its life expectancy and will require replacement in the near future. In many cases, this will be the first time that utilities will face significant capital needs that will not be funded by growth in the customer base. In addition, this existing infrastructure repair and replacement will likely be more costly than placing comparable new infrastructure in service in undeveloped areas. This factor will significantly impact utilities in coming years and will likely be a major driver of rate increases.

INCREASING REGULATORY STRINGENCY

As the ability to measure water quality improves and technology for producing "cleaner" potable water and effluent advances, regulations will inevitably follow and utilities will need to spend resources to acquire the new technology and/or reconfigure the existing treatment processes. Further, individual wastewater utilities face their own specific treatment standards, for example nutrient removal, and will need to plan for the future to deal with emerging contaminants of concern. We believe that increasing regulatory stringency and advances in technology will drive rates higher in the short term.

DECREASING PER CAPITA CONSUMPTION

We have observed that more and more of the utilities that we serve are facing declining per capita consumption. We believe that there are two primary reasons for this trend. The first reason is that each generation of new home appliances is more and more water efficient. During the 1960s and 1970s, growth in consumption was fueled by the addition of water using devices to homes. With the replacement of each device, water efficiency is gained. The second reason is that the conservation message has been internalized by much of the population. A conservation ethic is replacing old habits in small ways, such as turning off faucets, and in larger ways, like replacing thirsty landscapes. We believe this has been accomplished through public education efforts and often reinforced by the pricing structure. In addition, many utilities have faced water supply shortages which has forced additional efforts to reduce per capita consumption. Technological improvements including smart irrigation controllers and deployment of advanced metering infrastructure (AMI) will continue to decrease per capita consumption through conservation and efficiency putting an upward pressure on rates.

TECHNOLOGICAL IMPROVEMENTS

As mentioned earlier, water and wastewater treatment technology is constantly improving. Certain technological improvements will result in reduced costs and lower rates. Supervisory control and data acquisition (SCADA) systems allow for operations with fewer employees and help to minimize power loads. As a result, the cost of producing potable water and treating wastewater influent is decreasing with all other variables remaining the same. We believe technology will continue to improve benefits to customers and potentially lower rates.

EFFECTIVE UTILITY MANAGEMENT

Municipal utilities no longer see themselves as governmental monopolies. Elected officials and governing boards increasingly require utilities to operate as efficiently as possible. In fact, many utilities have gone through some sort of formal optimization process. We believe that these efforts will continue to place downward pressure on utility rates.

PUBLIC AND POLITICAL ACTION

The strongest force in limiting rate increases has been the political process. Whereas optimization efforts are beneficial to the utility, politically limited rate increases may not be. It would be unfair to say that public and political influence does not have some positive effects, as it often forces utilities to be as efficient as possible. We believe that this will continue to have a significant impact on limiting rate increases, particularly California's Proposition 218 and recent court cases related to the requirements of the constitutional amendment. However, when a needed rate increase is not implemented for political reasons, generally critical infrastructure replacement is deferred resulting in need for greater increases in the future.

OVERVIEW OF THE SURVEY

In 2015, an online survey was sent to water and wastewater service providers in California and Nevada. This self-reported survey included questions regarding the typical single-family residential water and wastewater bill, rate structure, billing frequency, connection fees, location, and service population. The survey information received provides data on 177 service providers (167 in California and 10 in Nevada). Because water usage varies widely by cities and regions, a benchmark water usage amount is needed to provide a basis to compare water rates. This survey relies on 15 ccf (hundred cubic feet) or 11,220 gallons of consumption per month as that benchmark for residential water use. The benchmark used in this survey to compare wastewater rates is 10 ccf or 7,480 gallons of residential wastewater generation per month. Since agencies have different billing frequencies, the fixed charges have been normalized to reflect a monthly rate. The California survey results are sorted first alphabetically by county and then by city. Additionally, several analyses are done on the four regions of California: Northern, San Joaquin Valley, Central Coast, and Southern.

The regions are comprised of the following counties:

- **Northern:** Alameda, Amador, Butte, Calaveras, Contra Costa, El Dorado, Humboldt, Lake, Marin, Mariposa, Mendocino, Placer, Plumas, Sacramento, San Benito, San Mateo, Santa Clara, Santa Cruz, Shasta, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tuolumne, Yolo, and Yuba
- **San Joaquin Valley:** Fresno, Inyo, Kern, Merced, Mono, and Tulare
- **Central Coast:** San Luis Obispo and Santa Barbara
- **Southern:** Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura

This year's Nevada survey includes data from the following counties: Churchill, Clark, Douglas, Pershing, and Washoe.

Given the limited number of responses, wastewater survey results include the four California regions from above and the Nevada agencies.

This is our sixth survey in California/Nevada (previous surveys include 2005, 2007, 2009, 2011, and 2013 (though as the inaugural survey, 2005 data was limited to California)). In the survey, we have made some comparisons regarding the bill frequency, rate structure, and user charges between 2013 and 2015. The comparisons for California are made when applicable, and include only the 100 agencies that participated in both the 2013 and 2015 surveys. Characteristics of billing frequency, rate structures, and water charges are also included.

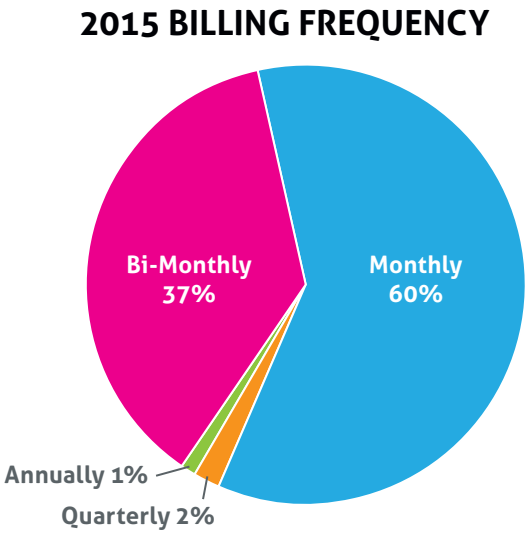
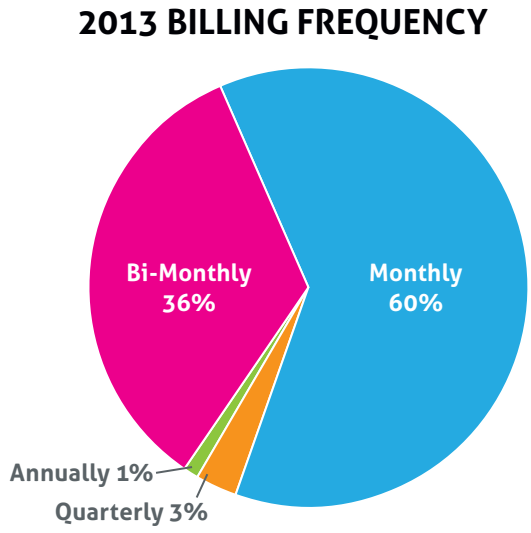


Figure 1: Billing Frequency for California Agencies Reported in 2015 Survey



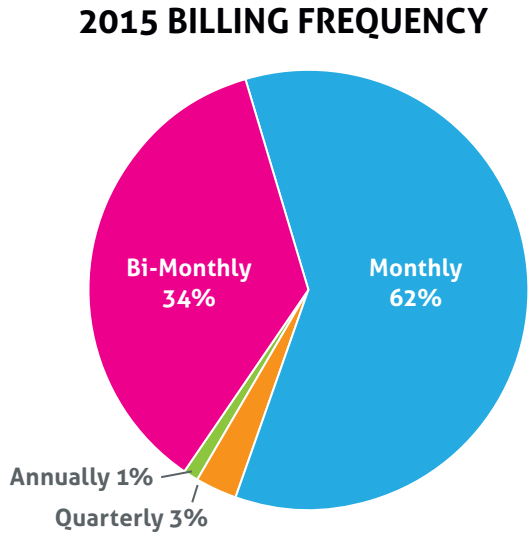


Figure 2: Billing Frequency Comparison for California Agencies Reported in both 2013 and 2015 Surveys

CALIFORNIA WATER RATE SURVEY RESULTS

BILLING FREQUENCY

As shown in Figure 1, 60 percent of the agencies in our survey sample bill monthly and 37 percent have a bi-monthly rate structure.

We have also examined the billing frequency trend, shown in Figure 2[1]. Over the last two years, our analysis shows that the bi-monthly billing has decreased from 36 percent in 2013 to 34 percent in 2015. This decrease corresponds with an increase in monthly billing, which was 60 percent in 2013 and is currently 62 percent in 2015. This behavior goes along with the overall industry trend especially as: 1) more agencies use automated meter reading technologies; and, 2) more agencies desire to send regular and consistent conservation messaging. Monthly billing is predominantly becoming more popular, as monthly billing helps convey information on consumption and pricing to an agency's customer base faster. Also, as rates increase and bills get larger, customers may find it easier to pay smaller monthly bills than larger bi-monthly bills.

Figure 2 compares the billing frequency between 2013 and 2015. Only agencies participating in both years are counted; therefore, the percentage shown in 2015 will be different from the percentage shown in Figure 1 since there are 167 agencies counted in the 2015 survey and only 100 agencies that participated in both years.

[1]Includes only 100 agencies that participated in both 2013 and 2015 rate surveys

167 agencies from California reported rates in the 2015 survey. The number of agencies that reported in both surveys is 100.

RATE STRUCTURE

Figure 3 demonstrates that inclining rate structures constitute 72 percent (66 percent inclining, 6 percent budget) of the rate structures among utilities in this year's survey. The "other" category includes rate structures such as flat, seasonal, and minimum charge for consumption rates. While uniform, inclining, and declining rate structures are well known and have been in use by agencies for many years, the number of agencies utilizing water budget rate structures is increasing. Water budget-based rate structures are a type of inclining rate structure in which the block definition is different for each customer based on an efficient level of water use by that customer and the parcel of land serviced. The tiers are typically set based on efficient indoor and outdoor use allocations. Please consult the authoritative AWWA manual, *M1: Principles of Water Rates, Fees, and Charges*, or contact RFC if you would like additional information on rate structures.

Figure 4 shows the trend of rate structures from 2013 through 2015, with an increase in inclining blocks from 68 percent (63 percent inclining and 5 percent water budget) of survey respondents to 71 percent (65 percent inclining and 6 percent budget). Only agencies participating in the 2013 and 2015 surveys were included. Over the last two years, our analysis shows that water budget rates has increased from 5 percent in 2013 to 6 percent in 2015. This has become an increasingly popular rate structure designed to ensure efficient use of water. These results are consistent with RFC's experience.

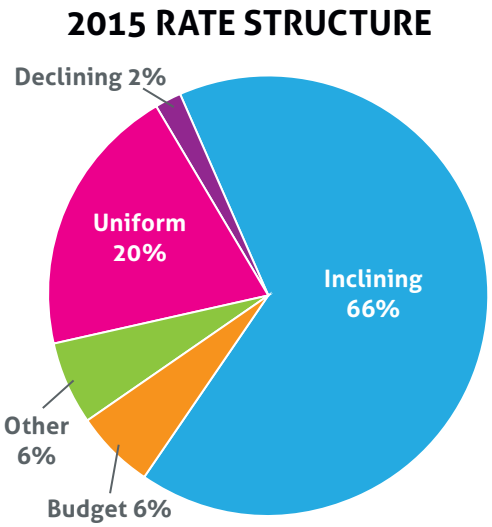
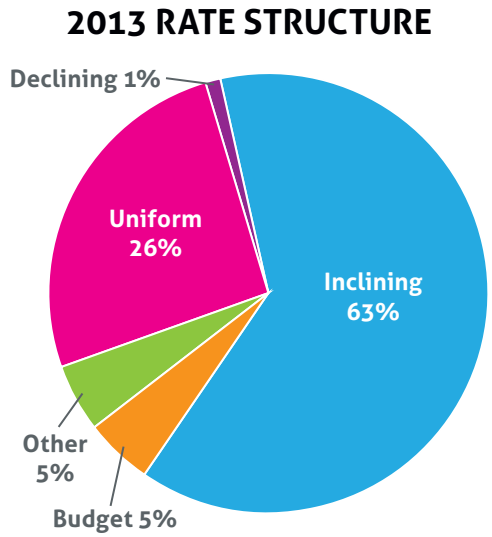


Figure 3: Rate Structure for California Agencies Reported in 2015 Survey



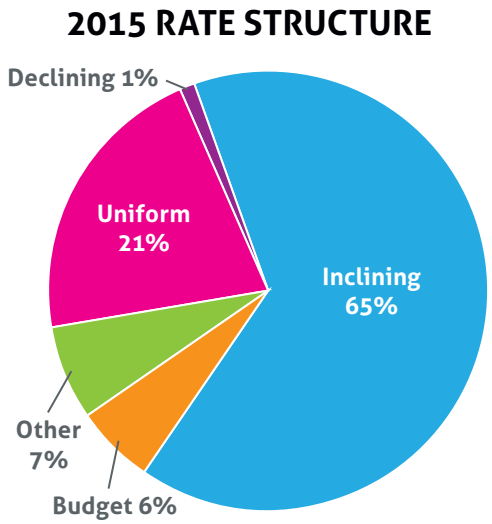
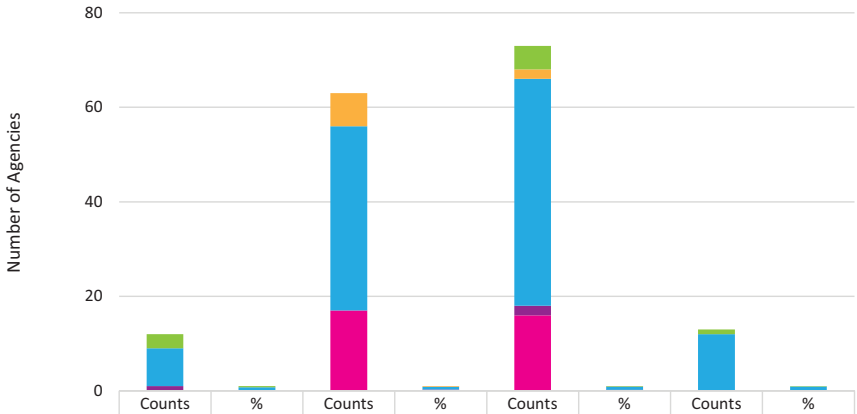


Figure 4: Rate Structure Comparison for California Agencies Reported in both 2013 and 2015 Surveys

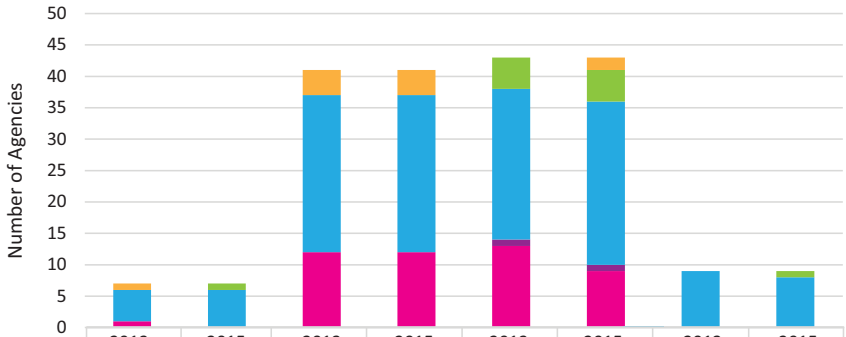
2015 RATE STRUCTURE BY REGIONS



	Counts	%	Counts	%	Counts	%	Counts	%
	San Joaquin Valley		Southern		Northern		Central Coast	
Other	3	25%	0	0%	5	7%	1	8%
Budget	0	0%	7	11%	2	3%	0	0%
Inclining	8	67%	39	62%	48	66%	12	92%
Declining	1	8%	0	0%	2	3%	0	0%
Uniform	0	0%	17	27%	16	22%	0	0%

Figure 5: Rate Structure by Regions for California Agencies Reported in 2015 Survey

2013-2015 RATE STRUCTURE COMPARISON BY REGIONS



	2013	2015	2013	2015	2013	2015	2013	2015
	San Joaquin Valley		Southern		Northern		Central Coast	
Budget	1	0	4	4	0	2	0	0
Other	0	1	0	0	5	5	0	1
Inclining	5	6	25	25	24	26	9	8
Declining	0	0	0	0	1	1	0	0
Uniform	1	0	12	12	13	9	0	0

Figure 6: Rate Structure by Region for California Agencies Reported in both 2013 and 2015 Surveys

The regional variation of rate structures in Figure 5 shows that Central Coast California has the highest percentage of agencies with inclining tiered rate structures (92 percent) that would tend to promote conservation. In Southern California, 62 percent of the surveyed agencies reported inclining rate structures compared to 66 percent in Northern California. Southern and Northern California has 39 and 48 agencies reporting inclining rates, respectively. Water budget rate structures are predominantly found in Southern California (seven agencies) with two reported from Northern California.

Figure 6[2] compares the changes by regions and shows relatively little change from the previous survey conducted in 2013. Of note, two agencies reported water budget structures in Northern California for 2015 versus zero in 2013, as well as a decline in reported uniform rate structures from 13 agencies to nine.

[2]Compares only agencies participating in both 2013 and 2015 surveys (100 agencies)

CHARGES

As mentioned previously, all charges in this survey are based on the assumption that the utility residential customer uses 15 ccf[3] (11,220 gal) per month. For utilities that do not bill monthly, the charge was calculated on the assumption of 15 ccf per month usage. It should be noted that the average usage can vary significantly from agency to agency. For example, the average residential usage in Cambria is 2 ccf per month and the rate structure is designed for that level of usage so the charge at 15 ccf per month will be high with a tiered rate structure.

Figure 7 shows the average fixed charge and variable charge in the four regions in 2015. The Central Coast region has the highest average rate in our survey, which is about $82 per month. The San Joaquin region has the lowest average monthly bill, which is about $40 per month. While Northern and Southern California show variation between the fixed and variable components, the average monthly bill is similar.

Figure 8[4] shows the average water charges (separated by fixed and variable) by region for the 2013 and 2015 California surveys. On average, agencies in the San Joaquin Valley have the lowest water charges while Central Coast water service is the most expensive.

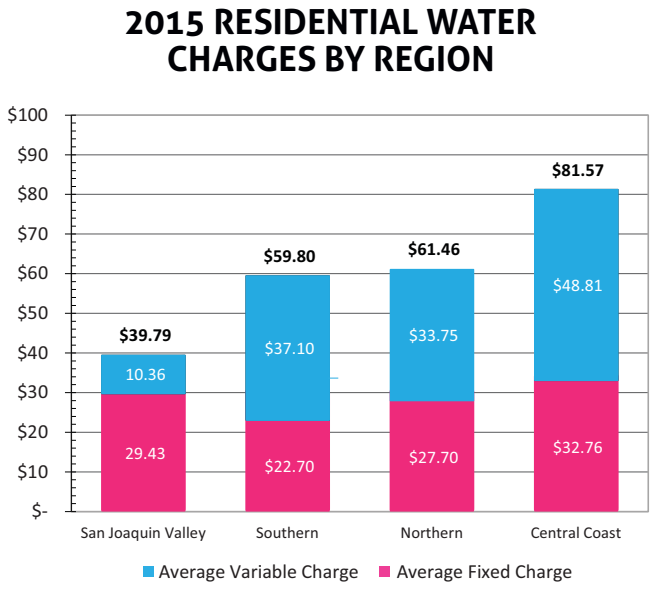


Figure 7: Water Charges by Region for California Agencies Reported in 2015 Survey

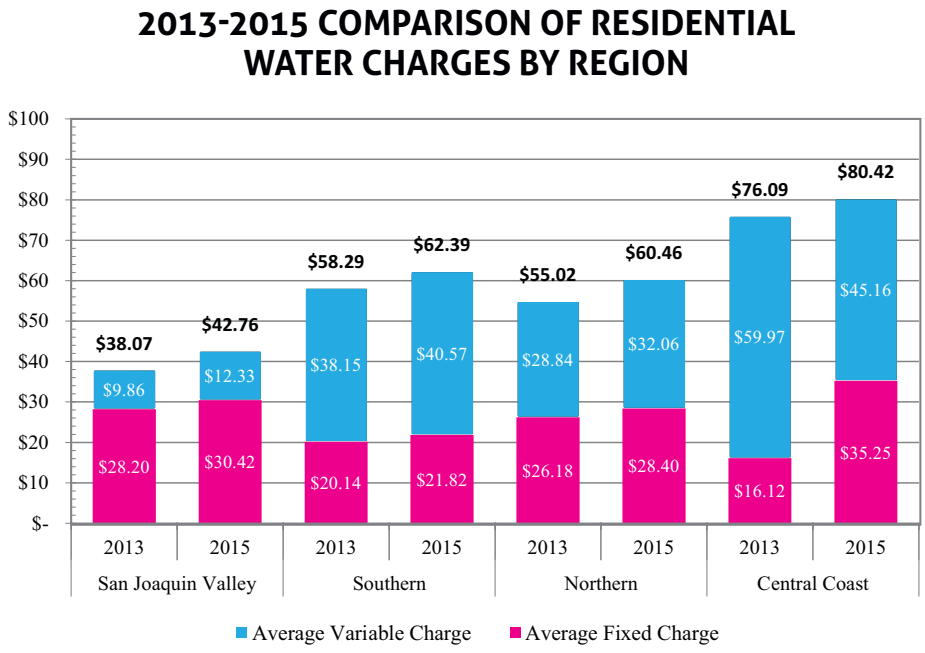


Figure 8: Water Charges Comparison for California Agencies Reported in both 2013 and 2015 Surveys

[3]1 ccf = 100 cubic feet = 748 gallons of water

[4]Compares only agencies participating in both 2013 and 2015 surveys (100 agencies)

Over the past two years, water rates have increased due to the drought situation in California and increasing water costs.

Table 1 summarizes the data in Figure 8 and shows the biennial percentage increases for each survey region. The data indicate that the increases in water charges are much higher than the Consumer Price Index (CPI), which rose 1.5 percent in 2013 and 1.6 percent in 2014, as provided by the Bureau of Labor Statistics. The highest percentage increase in the average monthly rates is in the San Joaquin Valley, followed by the Northern and Southern California regions.

Figure 9 shows the high and low monthly residential fixed water charge comparisons in the four regions for the 2013 and 2015 California surveys. Although water rates on a whole are trending higher, the fixed charges often do not increase as much, except for those in the Central Coast where there appears to be a greater emphasis on fixed charges and corresponding lower variable charges. A proportionally lower fixed charge means a higher variable charge for water consumption, which sends a stronger pricing signal for conservation and gives a customer more control over their water bill.

Figure 10 shows the high and low monthly residential variable water charge for 15 ccf, which is compared among the four regions for the 2013 and 2015 California surveys. Some of the highest and lowest variable rates are reported in the Central Coast and Northern regions.

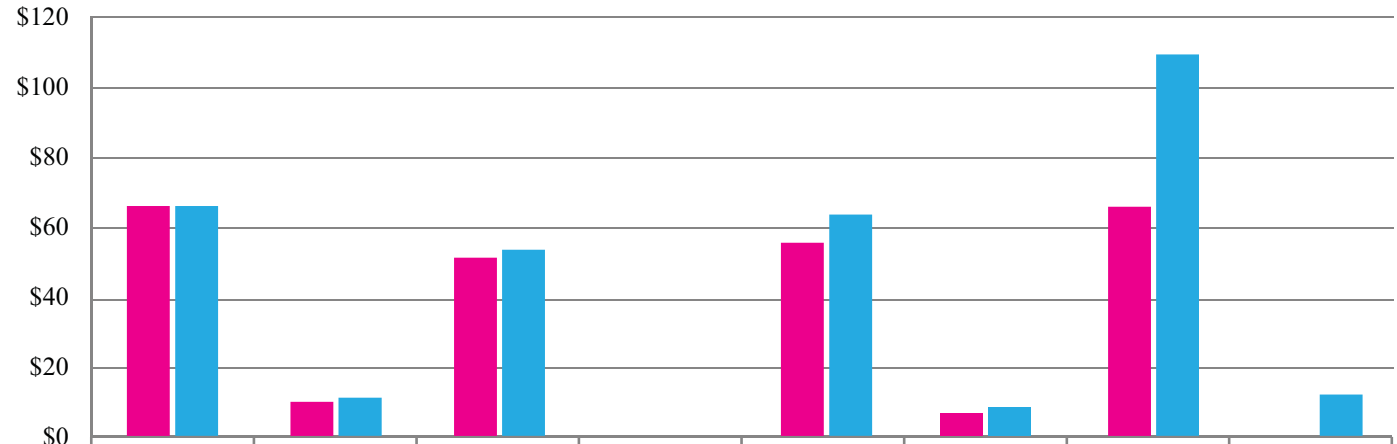
Note: Figure 9 and Figure 10 compare only agencies participating in both 2013 and 2015 surveys.

2013-2015 COMPARISON OF RATE STRUCTURES

	SAN JOAQUIN VALLEY	SOUTHERN	NORTHERN	CENTRAL COAST
2013	$38.07	$58.29	$55.02	$76.09
2015	$42.76	$62.39	$60.46	$80.42
% Increase	12%	7%	10%	6%

Table 1: Water Charges by Region Comparison

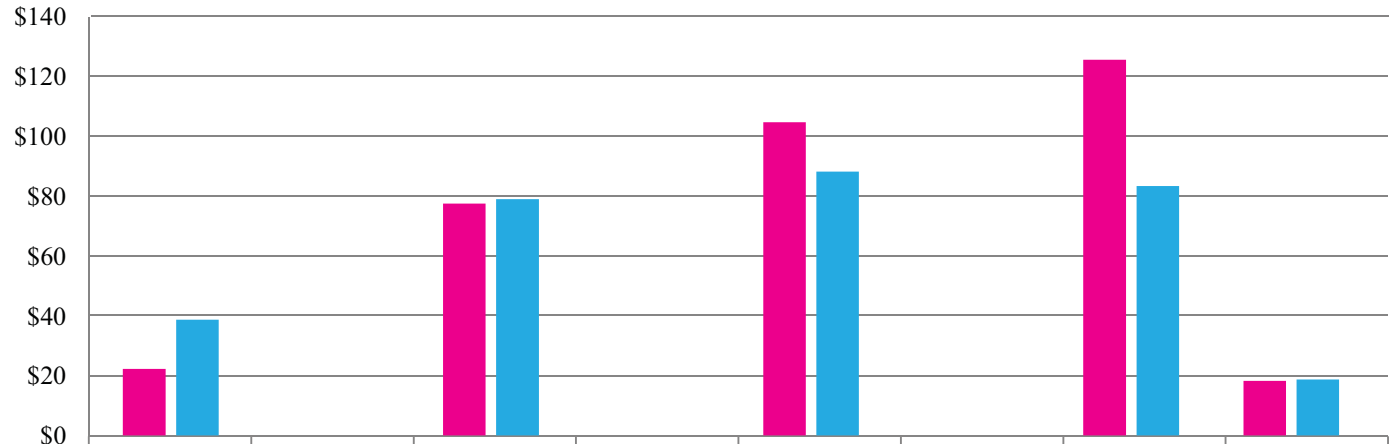
2013-2015 COMPARISON OF WATER FIXED CHARGES BY REGION



	High	Low	High	Low	High	Low	High	Low
	San Joaquin Valley		Southern		Northern		Central Coast	
2013	$65.00	$10.00	$51.10	$0.00	$55.30	$6.52	$65.63	$0.00
2015	$65.00	$11.00	$53.53	$0.00	$63.33	$8.41	$109.06	$11.91

Figure 9: Fixed Charge Comparison

2013-2015 COMPARISON OF WATER VARIABLE CHARGES BY REGION



	High	Low	High	Low	High	Low	High	Low
	San Joaquin Valley		Southern		Northern		Central Coast	
2013	$22.50	$0.00	$77.56	$0.00	$104.79	$0.00	$125.60	$18.75
2015	$38.83	$0.00	$79.10	$0.00	$88.34	$0.00	$83.41	$18.90

Figure 10: Variable Charge Comparison

2015 AVERAGE MONTHLY WATER CHARGES COMPARISON BY COUNTY

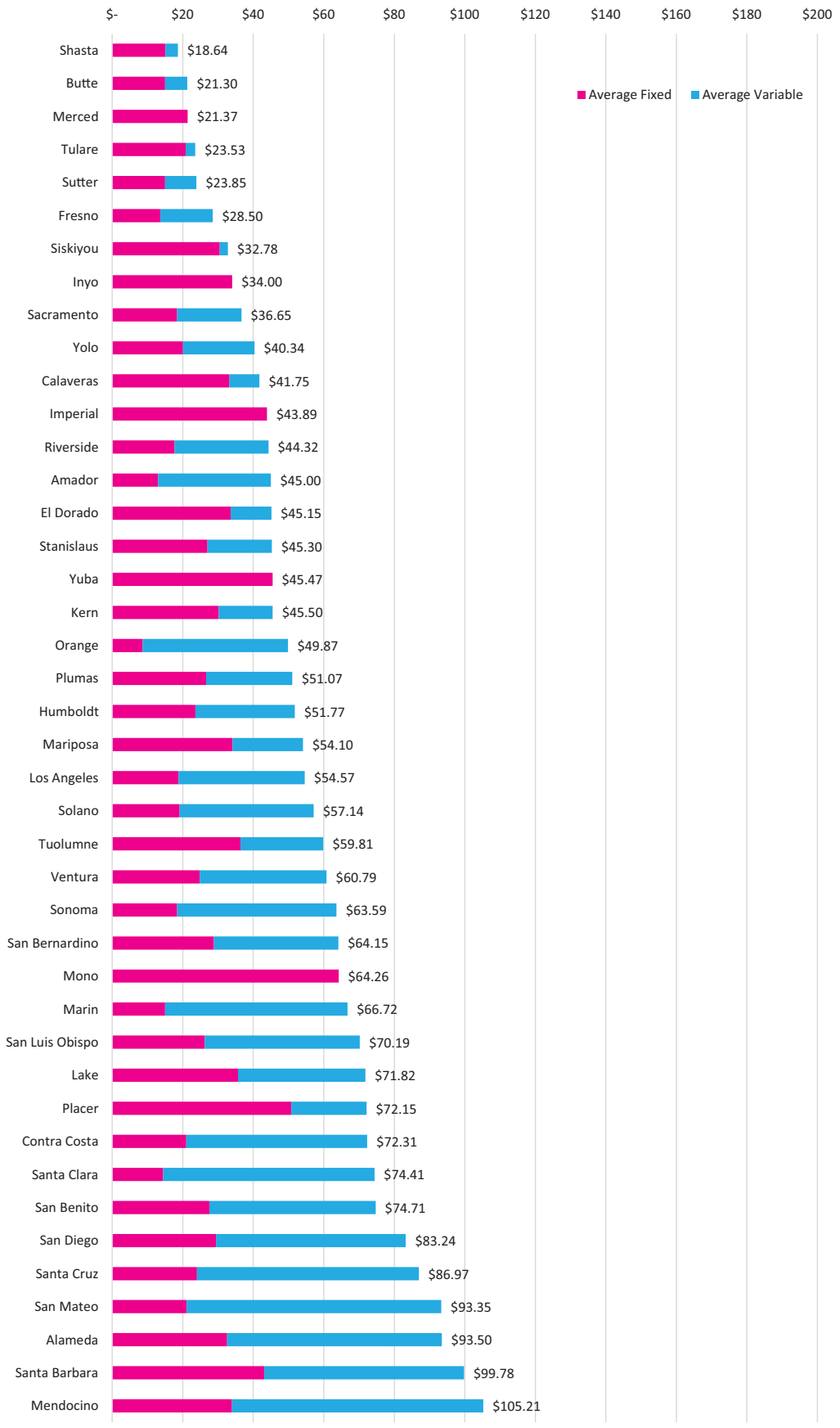


Figure 11: 2015 Average Monthly Water Charges Comparison by County in California

Figure 11 shows the average monthly rate for 15 ccf by county. Based on our survey, the highest rates are found in Mendocino County, while the lowest rates are in Shasta County.

Figure 12 displays the year in which the 2015 survey's utilities have most recently updated their rates. A clear majority of respondents (74 percent) have updated their rates within the past two years (2014 and 2015).

The 2013 survey reported that 61 percent of utilities had updated their rates within the previous two years (2012 and 2013).

Table 2 summarizes the comparison of connection charge (system development fee) data for the 2013 and 2015 surveys where data is available. This comparison indicates that the average connection charge has increased by 11 percent in two years.

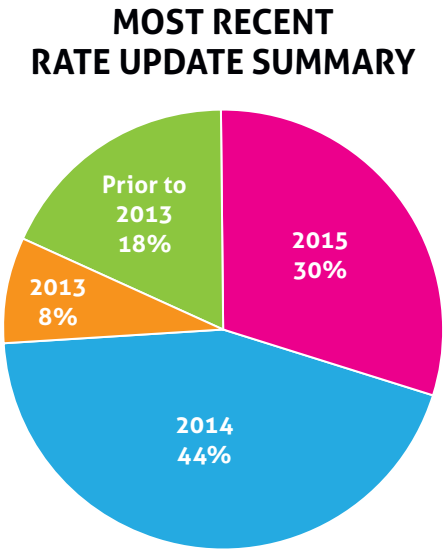


Figure 12: Rate Update Frequency for California Agencies

2013-2015 COMPARISON OF CONNECTION FEES

	2013	2015
HIGHEST	$28,600	$33,275
LOWEST	$750	$743
AVERAGE	$5,970	$6,622
% CHANGE (AVERAGE)		11%

Table 2: Connection Fee Charge Comparison

NEVADA RATE SURVEY RESULTS

10 agencies from the Nevada region responded to the survey and of those 10 agencies, eight are common to the 2013 and 2015 survey. The data below displays the trends in billing frequency, rate structure, and charges.

BILLING FREQUENCY

As shown in Figure 13, a large majority (90 percent) of the survey's respondents has a monthly billing structure.

Figure 14 compares the billing frequency between 2013 and 2015. Only agencies participating in both years are counted; therefore, the percentage shown in 2015 will be different from the percentage shown in Figure 13 since there are 10 agencies counted in the 2015 survey and only eight agencies that participated in both years. Billing frequency of the eight participating agencies did not change between 2013 and 2015.

RATE STRUCTURE

Figure 15 demonstrates that inclining rate structures constitute the majority (80 percent) of the rate structures among utilities in this year's survey.

Figure 16 displays, in percentage, the water rate structures of agencies in Nevada. There are eight agencies that responded to both the 2013 and 2015 survey. In 2013, all eight agencies had inclining rate structures. In 2015, seven of those agencies had inclining rate structures and one had a uniform rate structure.

2015 BILLING FREQUENCY

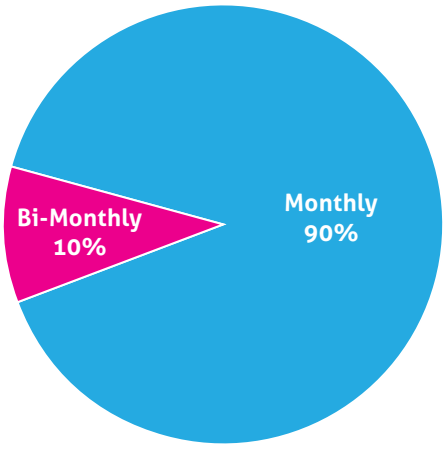


Figure 13: Billing Frequency for Nevada Agencies Reported in 2015 Survey

2015 RATE STRUCTURES

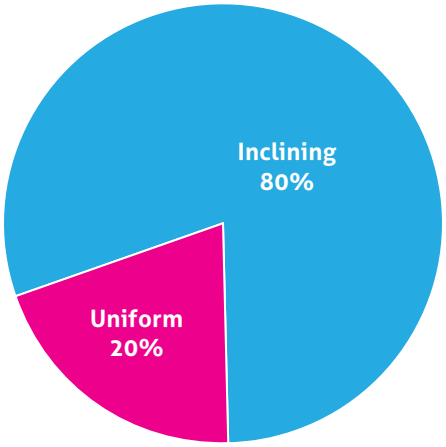
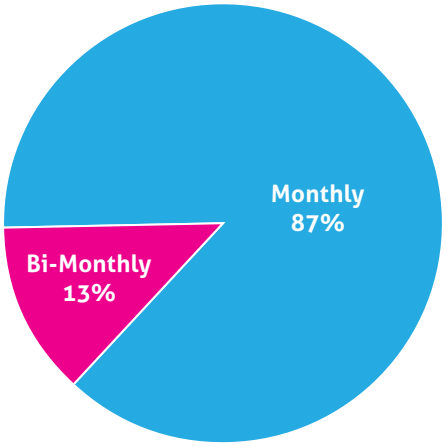
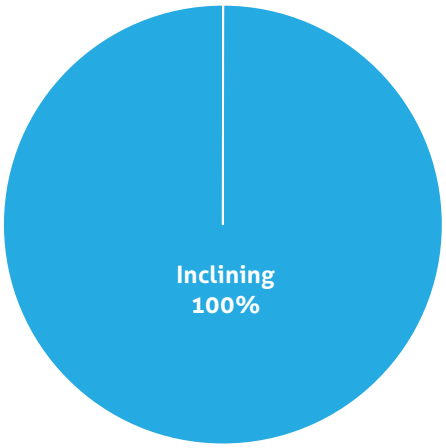


Figure 15: Rate Structure for Nevada Agencies Reported in 2015 Survey

2013 BILLING FREQUENCY



2013 WATER RATE STRUCTURES



2015 BILLING FREQUENCY

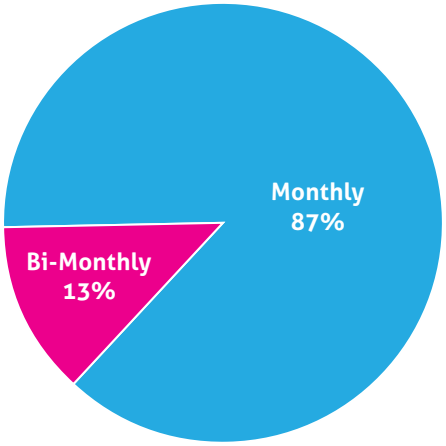


Figure 14: Billing Frequency for Nevada Agencies Reported in both 2013 and 2015 Surveys

2015 WATER RATE STRUCTURES

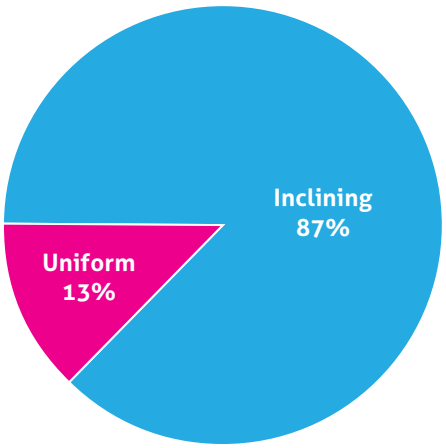


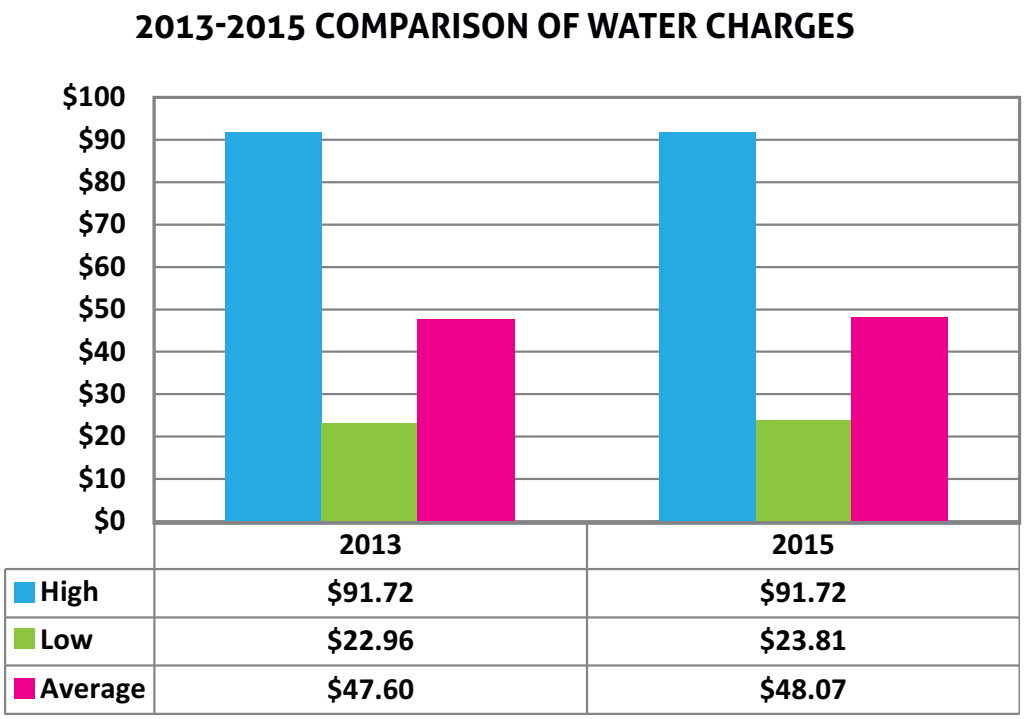
Figure 16: Rate Structure Comparison for Nevada Agencies Reported in both 2013 and 2015 Surveys

CHARGES

As in the California section, all charges below are based on the assumption that the utility customer uses 15 ccf (11,220 gal) per month. For utilities that do not bill monthly, the charge was calculated on the assumption of 15 ccf per month usage.

Figure 17 displays high, low, and average monthly residential water charges comparisons throughout the entire state. The average charge remained the same at around $48.

Figure 18 displays the year in which most utilities have most recently updated their rates. Half of the agencies have updated their rates within the past two years (2014 and 2015). This is up from the 43 percent that reported updating rates in the two years preceding the 2013 survey.



	2013	2015
High	$91.72	$91.72
Low	$22.96	$23.81
Average	$47.60	$48.07

Figure 17: Water Charge Comparisons for Nevada Agencies Reported in both 2013 and 2015 Surveys

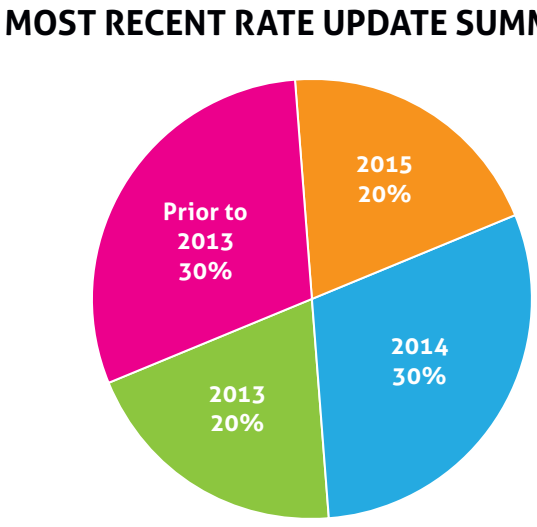


Figure 18: Rate Update Frequency for Nevada Agencies

DROUGHT RATES

As California, Nevada, and the rest of the Western U.S. continue into the fifth year of drought, many water agencies have adopted drought rates or drought surcharges as a way to drive mandatory conservation and recover lost revenue from reduced water sales. Of the 177 participants in the survey, 158 agencies responded to the survey section on drought rates. As indicated in Figure 19, of the 158 respondents, 28 (18 percent) have implemented drought rates while 130 (82 percent) have not. Follow-up questions were asked of agencies as to how their drought rates are determined, their targeted levels of conservation, and about allocation reductions for agencies with budget-based rates.

AGENCIES WITH DROUGHT RATES

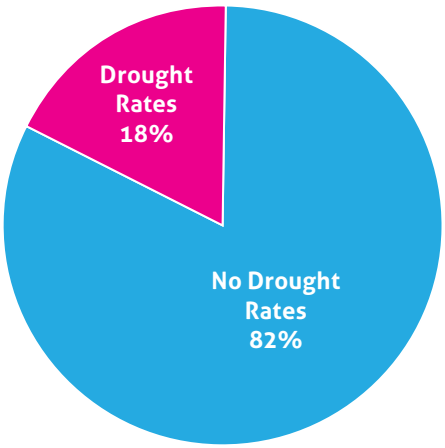


Figure 19: Water Agencies with Drought Rates

DROUGHT RATE/SURCHARGE BASIS

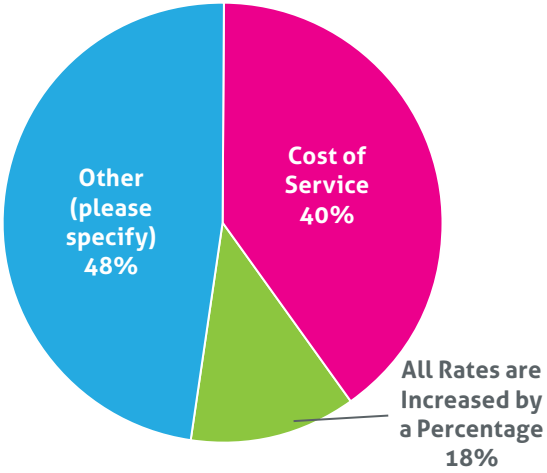


Figure 20: Drought Rate Design

BUDGET ALLOCATION REDUCTION

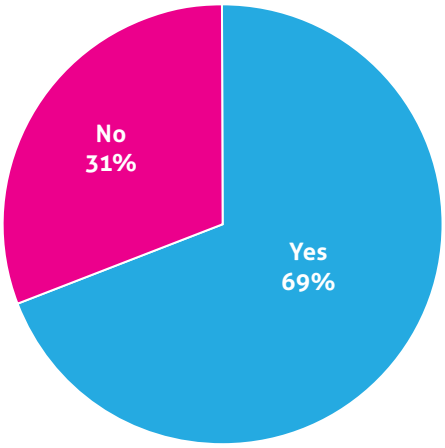


Figure 21: Agencies with Water Budgets - Drought Response

DROUGHT RATE CALCULATION

Water agencies have applied varying methodologies to the calculation of their drought rates. Of the 28 participants who have implemented drought rates, 25 answered how they arrive at their rates. Figure 20 shows that cost of service proved to be the most common method at 40 percent. In the "Other" category, answers included exceedance penalties to fixed surcharges or percentage increases, but only for specific tiers.

BUDGET-BASED ALLOCATIONS

Figure 21 shows that of the 16 water agencies with budget-based rate structures, 11 (69 percent) are using allocation reductions as part of their drought rate response while five (31 percent) do not. Within a water budget rate structure, reduced allocations is effectively a drought rate in and of itself. By reducing the allocation for individual budgets, and therefore reducing the tier widths, customers move to the higher tiers earlier in their use. In this situation, a customer who does not reduce their water use would pay more for water service in times of drought.

REDUCTION TARGETS – CALIFORNIA AGENCIES

Figure 22 illustrates the target percentage reduction ranges that participating water agencies identified as their goals. The chart shows the count of participants who chose each range. The ranges shown correspond to the State of California Water Resources Control Board (SWRCB) conservation tier standards as part of Governor Brown's Executive Order B-29-15 calling for statewide urban water sales reduction of 25 percent. The 27 agencies responding to this question of the survey sought a minimum of 16-20 percent reduction in water use, with the most common range being 24-28 percent. Greater than half of all responding agencies fall into this range. Three participants sought reductions greater than 36 percent.

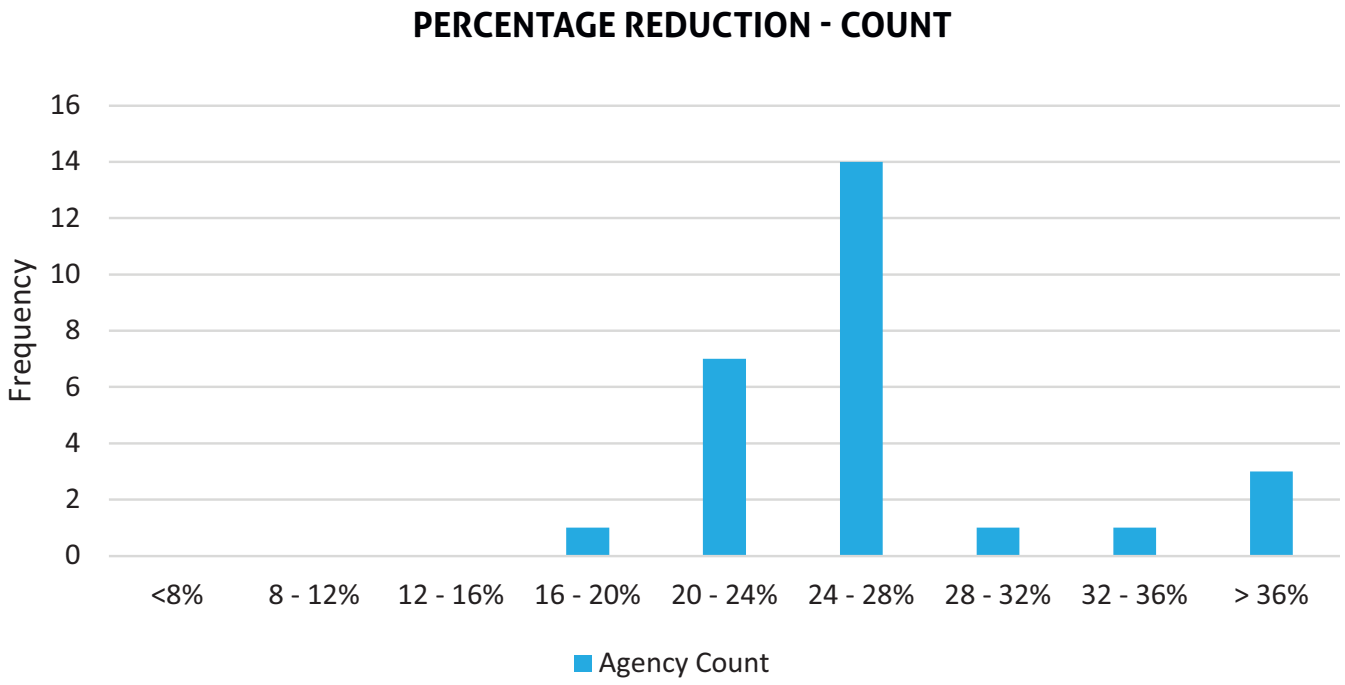


Figure 22: California Agencies - Conservation Targets (Count)

WASTEWATER RATE SURVEY RESULTS

For the first time, the California-Nevada Rate Survey has collected wastewater data from our water agency respondents who also provide wastewater service. In our inaugural year of wastewater service reporting, 87 of the 177 agencies participating in the water service section presented responses on their wastewater service. Included in the wastewater section are responses on recycled water service and pricing.

WASTEWATER SERVICE PROVIDED

As shown in Figure 23, 87 of the 177 agencies surveyed replied that they provide wastewater service[5] including four from Nevada. The survey results that follow summarize wastewater service charges for residential customers. Figures include results on the type of rate structure, average bill by region, and billing frequency, among other data.

BILLING FREQUENCY

The survey asked participants to describe their billing frequency for single-family residential customers. Figure 24 shows that, of the agencies who provide wastewater service, most bill monthly (67 percent), followed by bi-monthly (26 percent), and annually (6 percent). One agency bills quarterly and one agency did not respond to the question.

RATE STRUCTURE

Figure 25 shows the type of rate structure utilized by respondents for residential wastewater service. The majority use a fixed, or flat-fee, rate structure. 28 percent use a combination of fixed fee plus volumetric charge. Only 1 percent utilizes an exclusively volumetric rate structure.

[5]It should be noted that of the 177 agencies surveyed, only 163 responded to the question and 14 declined to state.

AGENCIES PROVIDING WASTEWATER SERVICE

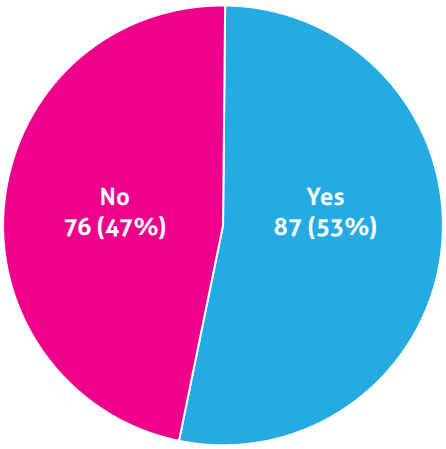


Figure 23: Water Agency Respondents and Wastewater Service

WASTEWATER BILLING FREQUENCY

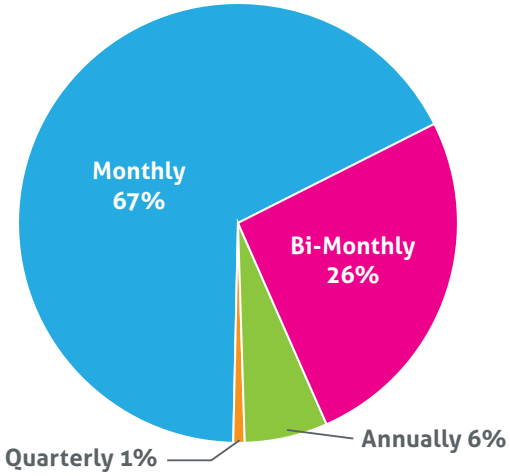


Figure 24: Wastewater Billing Frequency

WASTEWATER RATE STRUCTURE

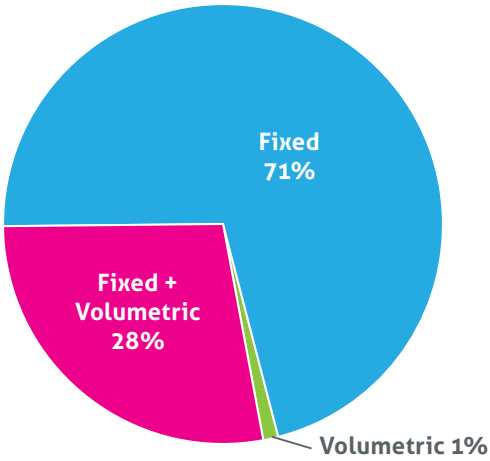


Figure 25: Wastewater Rate Structure

BASIS FOR VOLUMETRIC CHARGE

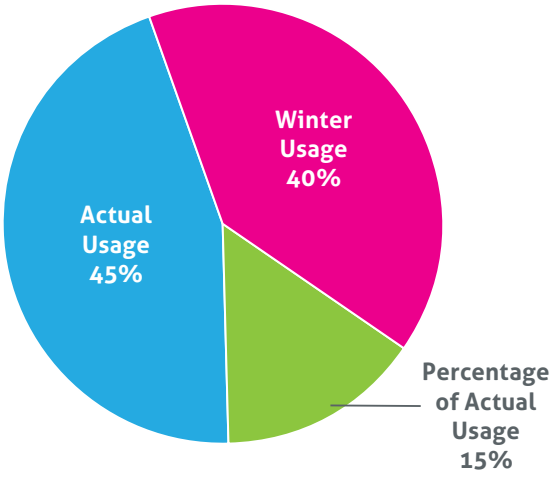


Figure 26: Volumetric Charge Basis

WATER USE MAXIMUM FOR VOLUMETRIC CHARGE

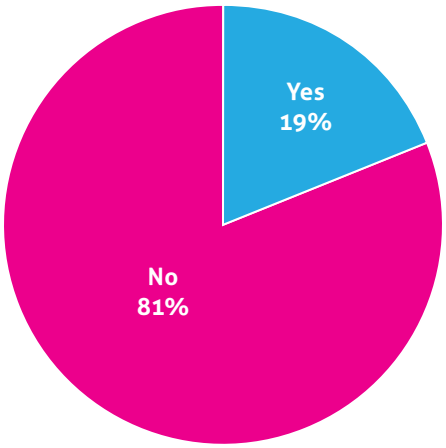


Figure 27: Water Use Cap on Wastewater Volumetric Component

VOLUMETRIC CHARGE

Figure 26 delves further into the rate structure. It examines the basis for the volumetric portion of wastewater rates for the agencies that use volumetric or fixed plus volumetric structures. Of the 25 agencies that have a portion or all of the wastewater rate as a volumetric charge, 20 responded to the follow-up question: "What is the basis for your volumetric charge?" Nine agencies (45 percent) use actual water to determine the volumetric charge. Eight agencies (40 percent) use winter water usage which assumes that all water use at the time goes through the sewer system as there is little to no irrigation. Lastly, three agencies (15 percent) use a percentage of actual usage to estimate residential wastewater flows that are collected and treated in the wastewater system.

Of the agencies that include a volumetric charge as a component of the rate structure, 81 percent do not have a cap, or maximum, on the volume charge, while 19 percent do have a maximum. Figure 27 illustrates these proportions. The caps from respondents range between 10 ccf and 35 ccf per single-family account.

CHARGES

All charges in this survey are based on the assumption that the utility's residential customer uses 10 ccf per month, or 7.5 kgal, if the rate structure includes a volumetric charge. For utilities that do not bill monthly, the charge was calculated on the assumption of 10 ccf per month usage.

Figure 28 shows the average wastewater charge for the 87 agencies that responded to the survey. The charges are displayed in a box plot, also known as a box and whiskers plot. In the graph, the orange and blue combined box shows where the central 50 percent of the responses lie on the range of residential wastewater charges. The top boundary of the box (top boundary of the orange portion) indicates that 75 percent of all reported charges lie below $43.48. Next, the lower boundary of the box (bottom of the blue portion) indicates that 25 percent of responses were lower or equal to $18.00.

The boundary dividing the orange and blue portions of the box indicates the median, $32.58, with 50 percent of the values reported less than or equal to it. Please note that this is nearly identical to the average of $32.84 (not shown). We see that half of wastewater service charges for 10 ccf of use falls between $18.00 (the 25th percentile) and $43.48 (the 75th percentile).

The whiskers extend to the minimum and maximum charge. The minimum charge represented is $7.50 and the maximum (100th percentile) is $78.54. The red markers above the maximum charge represent outliers: these charges may be due to local or agency specific characteristics, and are unique to these utilities. Therefore, they are not included as representative of the data. The outliers range from $86.68 to $180.64 per month. Figure 29 shows the box chart with the outliers removed.

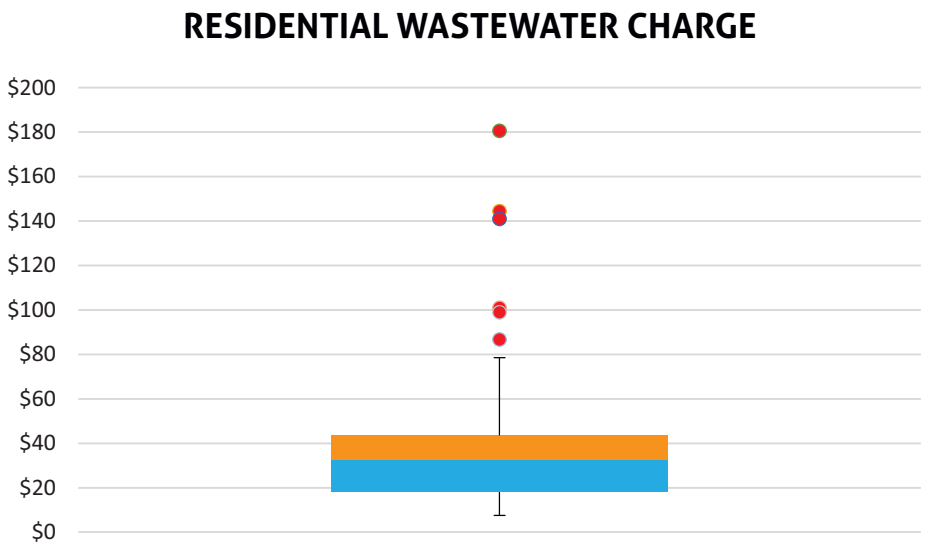


Figure 28: Wastewater Agency Charges

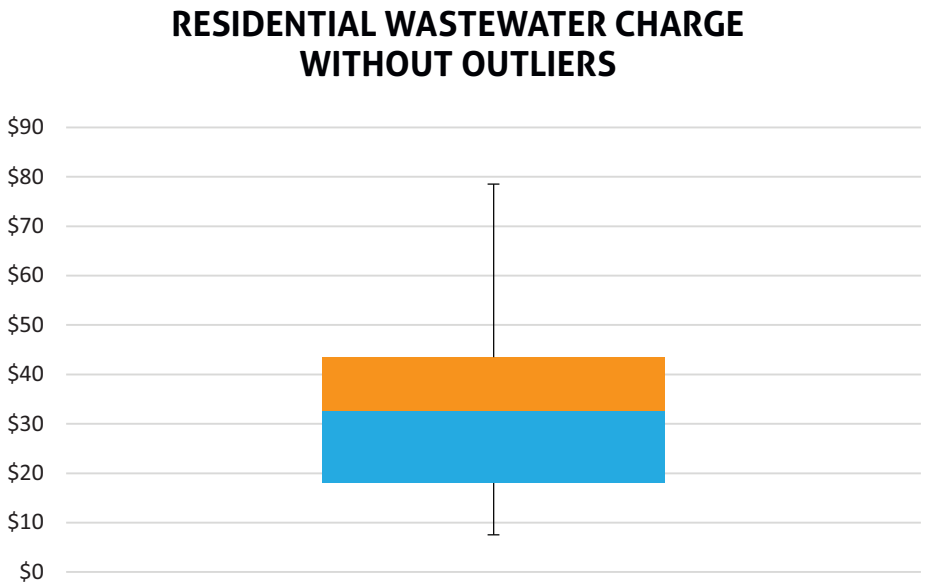


Figure 29: Wastewater Agency Charges Without Outliers

CHARGES BY REGION

Figure 30 shows the average wastewater charge by region. As there are only four respondents from Nevada, all responses have been incorporated into one chart; California is divided into the four geographical regions: San Joaquin, Southern, Northern, and Coastal. The chart shows that Northern California has the highest wastewater rates on average for residential customers. Southern California has the lowest rates. Nevada rates are close to the overall California average of $39.38.

RATE STRUCTURE BY REGION

Figure 31 indicates the billing period structures implemented by region. Across California, monthly billing is the most commonly used billing period. Nevada's four respondents also all bill monthly. Bi-monthly is the second most used. Annual billing surpassed quarterly, with five participants, four of which were in the Northern region. Quarterly billing was only used by one agency in the Northern region and no others.

RECYCLED WATER

Recycled water can be a valuable tool in reducing potable demand and reducing stress on sources of supply. Agencies are evaluating the potential of adding a recycled water component, particularly in light of extended drought. Study participants were asked whether or not their agency currently provided recycled water service. Of the 160 respondents, 42 provide recycled water service while 118 do not. This translates to one of every four surveyed agencies providing recycled water service. Results are shown in Figure 32.

RECYCLED WATER PRICING

The survey also asked agencies providing recycled water service how they arrived at their pricing. Approximately half of the participants price recycled water as a percentage of the potable water rate. Twelve of the 42 respondents stated that they use cost of service, covering nearly one-third of the agencies providing recycled water. Seven participants use other methodologies. For example, one method uses percentage of the potable rate for one customer class and the market rate for another within one agency. Finally, one participant uses the market rate and one did not provide a response. Results are shown in Figure 33.

AVERAGE WASTEWATER CHARGE BY REGION

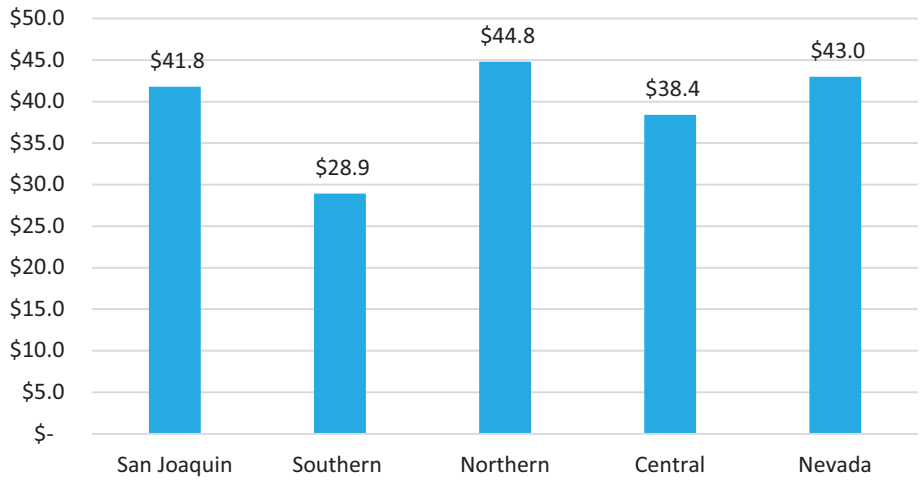
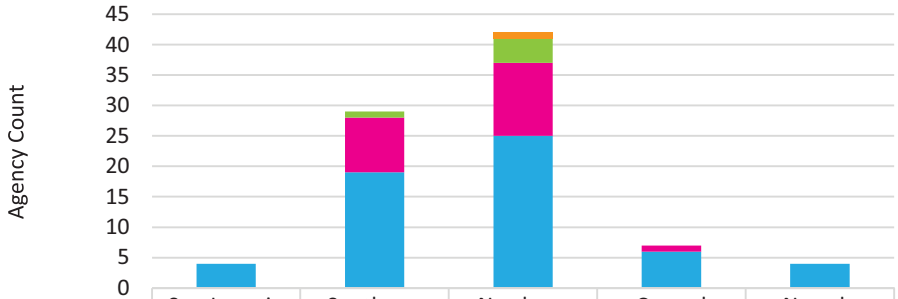


Figure 30: Average Wastewater Charges by Region

BILLING FREQUENCY BY REGION



	San Joaquin	Southern	Northern	Central	Nevada
Quarterly	0	0	1	0	0
Annually	0	1	4	0	0
Bi-Monthly	0	9	12	1	0
Monthly	4	19	25	6	4

Figure 31: Wastewater Rate Structures by Region

RECYCLED WATER SERVICE

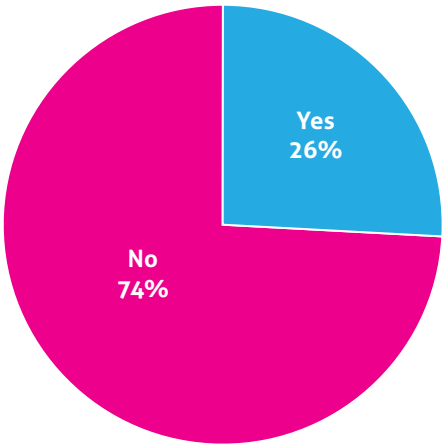


Figure 32: Agencies Providing Recycled Water Service

RECYCLED WATER PRICING

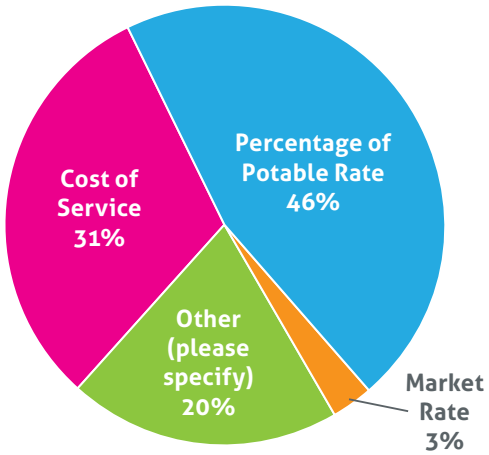


Figure 33: Pricing of Recycled Water

CALIFORNIA WATER SURVEY PARTICIPANTS

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
ALAMEDA	Dublin & San Ramon	Dublin San Ramon Services District	05/05/2014	Bi-monthly	$32.56	$60.94	$93.50	Budget	78,300	10	$12,246
AMADOR		Amador Water Agency	07/01/2014	Monthly	$13.00	$32.00	$45.00	Inclining	37,764	7	$12,000
BUTTE	Oroville	South Feather Water and Power Agency	01/01/2014	Monthly	$15.00	$6.30	$21.30	Declining	17,000	24	$4,222
CALAVERAS	San Andreas	Calaveras Public Utility District	07/01/2014	Monthly	$36.04	$8.70	$44.74	Inclining	4,000	9	$3,245
	Valley Springs	Valley Springs Public Utility District	04/01/2006	Monthly	$30.50	$8.25	$38.75	Inclining	900	7	
CONTRA COSTA	Concord	Contra Costa Water District	04/01/2015	Bi-monthly	$17.50	$51.75	$69.25	Uniform	500,000		$18,966
	Pittsburg	City of Pittsburg	01/01/2015	Monthly	$24.46	$50.91	$75.37	Inclining	66,183	14	$12,690
EL DORADO	Placerville	El Dorado Irrigation District	01/01/2014	Bi-monthly	$27.69	$21.84	$49.53	Inclining	100,000	16	$18,718
	South Lake Tahoe	Lukins Brothers Water Company, Inc.	04/04/2015	Tri-monthly	$36.00		$36.00	Other	3,000	11	$2,000
	South Lake Tahoe	South Tahoe Public Utility District		Quarterly	$37.02	$12.90	$49.92	Inclining	33,000	10	
FRESNO	Fresno	Bakman Water Company	05/06/2014	Bi-monthly	$13.65	$14.85	$28.50	Other	13,960		
HUMBOLDT	Eureka	City of Eureka	07/01/2014	Monthly	$35.10	$26.78	$61.88	Inclining	28,000		
	McKinleyville	McKinleyville Community Services District	01/01/2015	Monthly	$12.14	$29.51	$41.65	Inclining	15,200	7	$2,802
IMPERIAL	Calexico	City of Calexico	08/01/2008	Monthly	$43.89		$43.89	Uniform	40,516		
INYO	Bishop	City of Bishop	07/01/2014	Monthly	$34.00		$34.00	Other	3,879	34	$2,000
KERN	Arvin	Arvin Community Services District	01/01/2012	Monthly	$11.00	$18.75	$29.75	Inclining	19,000	33	$4,160
	Bakersfield	Greenfield County Water District	06/01/2014	Monthly	$21.95	$10.20	$32.15	Inclining	8,505	23	$4,850
	Bakersfield	Vaughn Water Company	04/01/2013	Monthly	$39.95	$3.60	$43.55	Inclining	30,400	40	$4,343
	Lancaster & Rosamond	Sundale Mutual Water Company	01/01/2013	Monthly	$65.00		$65.00	Inclining	1,100	47	$10,000
	Mojave	Mojave Public Utility District	03/01/2015	Monthly	$21.50	$14.96	$36.46	Other	4,000	16	$3,100
	Pine Mountain Club	Mil Potrero Mutual Water Company	07/01/2014	Quarterly	$28.75	$38.83	$67.58	Inclining	1,500	4	
	Ridgecrest	Dune 3 Mutual Water Co. LLC	02/01/2013	Monthly	$23.50	$20.50	$44.00	Inclining	300	9	
LAKE	Bonanza	Lake County Special District	01/16/2011	Bi-monthly	$19.08	$53.81	$72.89	Inclining	443	4	$1,500
	Clearlake Oaks	Clearlake Oaks County Water District	07/01/2012	Monthly	$32.36	$36.79	$69.15	Uniform			$3,673
	Finley	Lake County Special District	09/18/2003	Bi-monthly	$25.53	$14.70	$40.23	Inclining	637	6	$2,500
	Kelseyville	Lake County Special District	09/15/2003	Bi-monthly	$22.09	$14.70	$36.79	Inclining	2,625	9	$2,500
	Kono Tayee	Lake County Special District	09/09/2010	Bi-monthly	$70.21	$28.39	$98.60	Inclining	290	4	$12,450
	Middletown	Callayomi County Water District	06/01/2014	Monthly	$40.00	$24.20	$64.20	Budget	1,200	45	$4,900
	Mt Hanna	Lake County Special District	08/20/2014	Bi-monthly	$43.42	$92.78	$136.20	Inclining	87	3	$7,360
	N. Lakeport	Lake County Special District	07/21/2005	Bi-monthly	$41.53	$19.80	$61.33	Inclining	2,735	12	$4,776
	Soda Bay	Lake County Special District	10/20/2011	Bi-monthly	$45.73	$66.71	$112.44	Inclining	1,330	7	$4,776
	Spring Valley	Lake County Special District	08/26/2014	Bi-monthly	$32.20	$38.50	$70.70	Inclining	980	4	$20,816
	Starview	Lake County Special District	01/01/2000	Bi-monthly	$20.00	$7.50	$27.50	Inclining	379	3	$2,000

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
LOS ANGELES	Burbank	Burbank Water and Power	07/01/2014	Monthly	$11.16	$43.41	$54.57	Inclining	105,000	17	$960
	Covina, West Covina, La Puente, Glendora, Hacienda Heights	Suburban Water Systems	01/01/2015	Monthly	$18.68	$39.66	$58.34	Inclining	293,500	20	
	Downey	City of Downey	07/01/2014	Bi-monthly	$10.97	$23.39	$34.36	Inclining	113,000		
	Inglewood	City of Inglewood	10/01/2012	Monthly	$13.50	$52.50	$66.00	Inclining			
	La Verne	City of La Verne	02/09/2015	Bi-monthly	$36.40	$36.08	$72.48	Uniform	32,211	48	$3,400
	Lakewood	City of Lakewood	09/01/2014	Bi-monthly	$13.50	$36.57	$50.07	Inclining	59,081	25	
	Lancaster & Palmdale	Quartz Hill Water District	01/01/2015	Monthly	$23.13	$15.60	$38.73	Inclining	22,400	24	$8,251
	Long Beach	Long Beach Water Department	10/01/2014	Monthly	$13.56	$38.25	$51.81	Inclining	469,428	12	
	Palmdale	Palmdale Water District	01/01/2015	Monthly	$32.05	$11.25	$43.30	Budget	115,000		
	Pasadena	Kinneloa Irrigation District	01/01/2015	Monthly	$53.53	$52.95	$106.48	Uniform	1,950	45	$3,000
	Pico Rivera	City of Pico Rivera Water Authority	01/31/2013	Bi-monthly	$16.81	$43.80	$60.61	Uniform	39,000	18	
	San Fernando	San Fernando Water Department	07/01/2014	Bi-monthly	$16.47	$23.49	$39.96	Inclining		60	$2,766
	Santa Clarita	Newhall County Water District	07/01/2014	Monthly	$15.27	$34.54	$49.81	Uniform	44,000	21	$4,865
	Santa Monica	City of Santa Monica	05/01/2015	Bi-monthly		$51.83	$51.83	Inclining	92,185	15	$743
	Vernon	City of Vernon	03/01/2015	Monthly	$7.52	$27.48	$35.00	Uniform	55,000		
	Walnut, Diamond Bar, West Covina, Pomona, Rowland Heights	Walnut Valley Water District	01/01/2015	Monthly	$18.29	$41.52	$59.81	Inclining	113,000	24	
MARIN	Novato	North Marin Water District	06/01/2014	Bi-monthly	$15.00	$51.72	$66.72	Inclining	60,000	12	$33,275
MARIPOSA	Mariposa	Mariposa Public Utility District	10/15/2014	Monthly	$34.15	$19.95	$54.10	Inclining	2,000	70	$2,580
MENDOCINO	Fort Bragg	City of Fort Bragg	09/01/2014	Monthly	$29.00	$65.10	$94.10	Inclining			
	Gualala	North Gualala Water Company	01/15/2015	Monthly	$40.60	$107.73	$148.33	Inclining	2,627	3	$4,705
	Ukiah	City of Ukiah	07/01/2014	Monthly	$32.25	$40.95	$73.20	Uniform	16,185	8	
MERCED	Hilmar	Hilmar County Water District	07/01/2014	Monthly	$24.80		$24.80	Inclining	5,000		$7,770
	Winton	Winton Water and Sanitary District	07/01/2011	Monthly	$17.94		$17.94	Inclining	8,500	25	$3,600
MONO	Bridgeport	Bridgeport Public Utility District	11/18/2006	Monthly	$64.26		$64.26	Other	425		
ORANGE	Anaheim	Anaheim Public Utilities	02/01/2015	Bi-monthly	$5.00	$33.38	$38.38	Uniform	348,000	20	
	Brea	City of Brea	07/01/2014	Monthly	$9.38	$46.15	$55.53	Inclining	40,963	14	$2,786
	Costa Mesa	Mesa Water District	01/01/2015	Bi-monthly	$10.75	$51.00	$61.75	Uniform	108,000	14	$6,542
	Fountain Valley	City of Fountain Valley	07/01/2014	Bi-monthly	$6.16	$41.70	$47.86	Uniform	56,916	4	
	Laguna Beach	Laguna Beach County Water District	11/01/2014	Bi-monthly	$13.78	$63.75	$77.53	Budget		12	$820
	Laguna Niguel	Moulton Niguel Water District	04/01/2015	Monthly	$10.79	$22.15	$32.94	Budget	171,000	13	$1,200
	Santa Ana	City of Santa Ana	03/01/2015	Bi-monthly	$4.53	$30.58	$35.11	Budget	330,000	35	
PLACER	Meadow Vista	Meadow Vista County Water District	01/01/2015	Monthly	$57.30	$19.25	$76.55	Inclining	3,900	10	$14,685
	Olympic Valley	Squaw Valley Public Service District	07/01/2014	Annually	$63.33	$37.04	$100.37	Other	926		
	Tahoe City	Tahoe City Public Utility District	01/01/2015	Monthly	$59.00	$23.11	$82.11	Inclining	9,331	8	$2,500

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
PLACER	Tahoe Vista	North Tahoe Public Utility District	01/01/2015	Monthly	$42.02	$15.30	$57.32	Inclining	15,000		
		San Juan Water District	02/01/2015	Bi-monthly	$32.40	$12.00	$44.40	Uniform	37,260	33	$15,154
PLUMAS	Graeagle	Graeagle Water Company	01/01/2006	Bi-monthly	$20.25	$18.60	$38.85	Other	737	26	
	Greenville	Indian Valley Community Services District	06/01/2006	Monthly	$32.09	$37.05	$69.14	Uniform	3,000	8	
	Portola	City of Portola	07/01/2014	Monthly	$28.32	$37.40	$65.72	Uniform	2,000		$4,015
	Quincy	East Quincy Services District	07/01/2015	Monthly	$26.46	$9.60	$36.06	Other	2,500	14	$3,818
	Quincy	Quincy Community Services District	07/01/2014	Monthly	$26.15	$19.45	$45.60	Inclining	1,728	11	$3,729
RIVERSIDE	Bermuda Dunes	Myoma Dunes Mutual Water Company	01/01/2012	Monthly	$5.75	$14.55	$20.30	Uniform	6,159	49	$2,500
	Coachella	Coachella Water Authority	01/01/2015	Monthly	$13.80	$22.50	$36.30	Inclining	43,633		
	Hemet & San Jacinto	Lake Hemet Municipal Water District	04/01/2015	Monthly	$30.00	$35.45	$65.45	Inclining	50,000	18	$3,200
	Idyllwild	Pine Cove Water District	04/01/2015	Bi-monthly	$28.50	$42.70	$71.20	Inclining	1,095	8	
	Lake Elsinore, Murrieta, Wildomar	Elsinore Valley Municipal Water District	07/01/2014	Monthly	$16.58	$35.93	$52.51	Budget	128,232	20	$8,997
	Temecula	Rancho California Water Agency	06/12/2014	Monthly	$19.06	$13.20	$32.26	Budget	147,600	22	$1,561
	Temescal Valley	Lee Lake Water District	08/27/2013	Monthly	$20.87	$32.95	$53.82	Inclining	16,000	22	$6,000
		Coachella Valley Water District	08/01/2010	Monthly	$7.00	$15.70	$22.70	Budget	320,000	23	$3,707
SACRAMENTO	Rancho Murieta	Rancho Murieta Community Services District	07/01/2014	Monthly	$31.38	$22.95	$54.33	Uniform	5,488	15	
	Sacramento	Sacramento Suburban Water District	01/01/2015	Monthly	$5.46	$13.50	$18.96	Inclining	173,000		
SAN BENITO	Aromas	Aromas Water District	11/01/2014	Monthly	$32.30	$55.68	$87.98	Inclining	2,700	13	$12,790
	Hollister	Sunnyslope County Water District	12/21/2014	Monthly	$22.79	$38.65	$61.44	Inclining	19,189	16	$9,950
SAN BERNARDINO	Apple Valley	Mariana Ranchos County Water District	06/24/2014	Monthly	$38.00	$38.70	$76.70	Inclining	1,485		$7,895
	Arrowbear Lake	Arrowbear Park County Water District	12/19/2014	Monthly	$24.50	$54.00	$78.50	Inclining	1,349	3	$3,450
	Big Bear City	Big Bear City Community Services District	07/01/2015	Bi-monthly	$57.66	$23.34	$81.00	Inclining	12,300	8	$8,588
	Big Bear Lake	City of Big Bear Lake	07/01/2014	Bi-monthly	$42.97	$31.52	$74.49	Inclining	25,600	4	$8,676
	Colton	City of Colton	01/01/2012	Monthly	$16.70	$24.15	$40.85	Uniform	47,000		
	Crestline	Crestline Village Water District	07/01/2013	Monthly	$17.50	$67.20	$84.70	Inclining	7,446	5	$3,010
	Hesperia	Hesperia Water District	01/02/2008	Bi-monthly	$19.64	$20.00	$39.64	Inclining	92,000	10	
	Lake Arrowhead	Lake Arrowhead Community Services District	02/01/2015	Monthly	$34.38	$38.16	$72.54	Inclining	15,000	3	$14,895
	Needles	City of Needles	11/01/2014	Monthly	$38.49	$7.50	$45.99	Uniform	3,600	13	$1,270
	Oak Hills	County of San Bernardino - CSA 70 J	07/01/2014	Bi-monthly	$30.40	$33.83	$64.23	Inclining	10,589	18	$9,849
	Ontario	City of Ontario	01/01/2015	Monthly	$22.75	$35.10	$57.85	Inclining	166,866	24	
	Rancho Cucamonga	Cucamonga Valley Water District	04/27/2010	Bi-monthly	$14.19	$26.00	$40.19	Inclining	186,000	42	$9,116
	Rialto, Colton, Fontana	West Valley Water District	01/01/2015	Monthly	$22.21	$32.80	$55.01	Inclining	73,016	24	$7,099
	Running Springs	Running Springs Water District	07/01/2014	Monthly	$27.14	$60.90	$88.04	Uniform	4,862	8	$5,382

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
SAN BERNARDINO	Spring Valley Lake	County of San Bernardino - CSA 64	07/01/2014	Bi-monthly	$23.50	$13.79	$37.29	Inclining	12,682	22	$1,454
	Twin Peaks	Alpine Water Users Association	09/13/2008	Bi-monthly	$22.50	$74.25	$96.75	Inclining	2,534		
	Upland	City of Upland	01/01/2015	Bi-monthly	$18.78	$21.65	$40.43	Inclining	75,670	27	$3,768
		Apple Valley Heights County Water District	10/21/2014	Monthly	$48.00	$32.50	$80.50	Inclining	800	20	$9,500
SAN DIEGO	Carlsbad	Carlsbad Municipal Water District	01/01/2015	Monthly	$21.08	$55.75	$76.83	Inclining	84,838	11	$3,931
	Chula Vista & National City	Sweetwater Authority	09/01/2014	Bi-monthly	$8.60	$79.10	$87.70	Inclining	186,900	11	$2,400
	Escondido	Rincon del Diablo Municipal Water District	09/01/2014	Monthly	$28.85	$56.90	$85.75	Inclining	22,650		
	Fallbrook	Fallbrook Public Utility District	07/01/2014	Monthly	$39.24	$50.82	$90.06	Inclining	35,000		
	Pauma Valley	Yuima Municipal Water District	07/01/2015	Monthly	$37.97	$48.23	$86.20	Uniform	1,350	26	$2,674
	San Marcos	Vallecitos Water District	01/01/2015	Monthly	$29.29	$49.70	$78.99	Inclining	97,481	14	$6,846
	Solana Beach	Santa Fe Irrigation District	01/01/2013	Bi-monthly	$29.24	$49.05	$78.29	Inclining	19,400	63	$11,549
	Valley Center	Valley Center Municipal Water District	02/01/2015	Monthly	$35.76	$59.96	$95.72	Uniform	25,295	27	$4,644
		Borrego Water District	08/19/2014	Monthly	$35.12	$34.50	$69.62	Uniform	2,000		
SAN LUIS OBISPO	Atascadero	Atascadero Mutual Water Company	01/16/2011	Monthly	$18.00	$18.90	$36.90	Inclining	30,048	15	$19,600
	Cambria	Cambria Community Services District	05/01/2014	Bi-monthly	$11.91	$80.23	$92.14	Inclining	7,000	2	$9,000
	Cayucos	County of San Luis Obispo - CSA 10A	01/10/2012	Bi-monthly	$61.41	$47.68	$109.09	Inclining	2,592	5	$8,100
	Los Osos	Los Osos Community Services District	07/01/2014	Bi-monthly	$22.88	$73.90	$96.78	Inclining	7,086	10	
	San Miguel	San Miguel Community Services District	06/01/2013	Monthly	$14.69	$20.40	$35.09	Inclining	2,300	8	$9,490
	Santa Margarita	County of San Luis Obispo - CSA 23	07/22/2008	Bi-monthly	$30.71	$35.11	$65.82	Inclining	1,259	8	$1,500
	Shandon	County of San Luis Obispo - CSA 16-1	02/03/2015	Bi-monthly	$33.50	$49.58	$83.08	Inclining	1,295	10	$2,800
	Templeton	Templeton Community Services District	01/01/2014	Monthly	$17.05	$25.56	$42.61	Inclining	7,674		$24,478
SAN MATEO	Daly City	City of Daly City	07/01/2014	Bi-monthly	$16.06	$75.90	$91.96	Inclining	104,000	9	
	Redwood City	City of Redwood City	07/01/2014	Bi-monthly	$26.13	$68.60	$94.73	Inclining	86,000	13	$2,638
SANTA BARBARA	Montecito	Montecito Water District	08/14/2015	Monthly	$38.66	$70.20	$108.86	Inclining	13,500	23	
	Santa Barbara	City of Santa Barbara	07/01/2014	Monthly	$14.22	$83.41	$97.63	Inclining	92,756	12	$6,070
	Santa Maria	City of Santa Maria	07/01/2014	Monthly	$30.01	$58.42	$88.43	Inclining	101,000	15	
	Solvang	City of Solvang	10/20/2014	Monthly	$109.06	$50.56	$159.62	Other	5,363		$13,109
	Vandenberg Village	Vandenberg Village Community Services District	07/01/2014	Monthly	$23.78	$20.60	$44.38	Inclining	6,712	17	$4,670
SANTA CLARA	Milpitas	City of Milpitas	07/28/2014	Bi-monthly	$13.68	$53.95	$67.63	Inclining	70,000	14	$1,910
	Morgan Hill	City of Morgan Hill	01/01/2015	Monthly	$8.41	$32.65	$41.06	Inclining	40,000		
	Palo Alto	City of Palo Alto	07/01/2013	Monthly	$14.67	$98.16	$112.83	Inclining	66,861	12	$5,000
	San Jose	San Jose Water Company	01/01/2015	Bi-monthly	$21.05	$55.05	$76.10	Inclining	1,044,400	13	

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
SANTA CRUZ	Aptos	Central Water District	11/19/2013	Bi-monthly	$20.00	$28.85	$48.85	Inclining	2,700	10	$5,827
	Boulder Creek	San Lorenzo Valley Water District	01/01/2015	Monthly	$30.64	$63.00	$93.64	Inclining	28,205	10	
	Santa Cruz	City of Santa Cruz	07/01/2015	Monthly	$21.08	$71.53	$92.61	Inclining	90,000		
	Scotts Valley	Scotts Valley Water District	12/15/2014	Bi-monthly	$24.43	$88.34	$112.77	Inclining	10,500	9	$19,976
SHASTA	Anderson	City of Anderson	10/01/2014	Monthly	$11.71		$11.71	Uniform	10,000		
	Redding	Bella Vista Water District	06/01/2015	Bi-monthly	$18.53	$7.05	$25.58	Uniform	17,619	24	$11,173
SISKIYOU	McCloud	McCloud Community Services District	12/01/2014	Monthly	$40.00		$40.00	Uniform	1,300		$5,000
	Weed	City of Weed	03/01/2015	Monthly	$20.95	$4.62	$25.57	Uniform	3,000	11	
SOLANO	Vacaville	City of Vacaville	03/01/2014	Bi-monthly	$16.05	$22.74	$38.79	Inclining	94,000	17	$8,025
	Vallejo	Vallejo Water Division	07/01/2013	Bi-monthly	$22.20	$53.28	$75.48	Inclining	118,000	9	
SONOMA	Forestville	Forestville Water District	07/01/2014	Bi-monthly	$28.70	$34.44	$63.14	Uniform	2,500	7	$1,680
	Forestville	Russian River County Water District	08/01/2010	Monthly	$18.50	$44.00	$62.50	Inclining	3,700	7	
	Guerneville & Monte Rio	Sweetwater Springs Water District	07/01/2014	Bi-monthly	$33.28	$40.05	$73.33	Inclining	9,000	7	$5,283
	Santa Rosa	City of Santa Rosa	01/01/2015	Monthly	$12.52	$58.28	$70.80	Inclining	180,000		
	Sonoma	Valley of the Moon Water District	09/01/2014	Bi-monthly	$8.17	$44.99	$53.16	Inclining	23,500	10	$10,000
	Windsor	Town of Windsor	07/01/2014	Bi-monthly	$9.13	$49.47	$58.60	Inclining	27,000		
STANISLAUS	La Grange	Lake Don Pedro Community Services District	07/01/2011	Monthly	$53.00	$30.00	$83.00	Uniform	1,415	16	
	Riverbank	City of Riverbank	07/01/2010	Bi-monthly	$14.65	$3.40	$18.05	Declining	23,000		
	Waterford	City of Waterford	07/01/2014	Monthly	$13.40	$21.45	$34.85	Uniform	312		
SUTTER	Sutter	Sutter Community Services District	03/01/2015	Monthly	$9.01	$17.70	$26.71	Uniform	2,904	15	$7,500
	Yuba City	City of Yuba City	09/01/2014	Monthly	$20.98		$20.98	Uniform	65,000		
TULARE	Dinuba	City of Dinuba	01/01/2014	Monthly	$20.85	$2.68	$23.53	Declining	23,966		
TUOLUMNE	Sonora	Tuolumne Utilities District	07/22/2014	Bi-monthly	$36.38	$23.43	$59.81	Inclining	44,000	9	$3,034
VENTURA	El Rio	Rio Plaza Water Company, Inc	04/09/2015	Monthly	$24.01	$26.01	$50.02	Inclining	2,200	18	$3,000
	Oak Vew	Casitas Municipal Water District	07/01/2013	Bi-monthly	$23.34	$15.54	$38.88	Inclining	65,000	20	$18,365
	Oxnard	City of Oxnard	01/01/2013	Monthly	$14.30	$45.33	$59.63	Inclining	196,720	12	$3,133
	Port Hueneme	City of Port Hueneme	07/01/2012	Bi-monthly	$37.62	$57.00	$94.62	Uniform	22,500	11	
YOLO	Winters	City of Winters	01/01/2014	Monthly	$20.09	$20.25	$40.34	Inclining	6,950	14	
YUBA	Wheatland	City of Wheatland	10/01/2014	Monthly	$45.47		$45.47	Inclining	3,495		

NEVADA WATER SURVEY PARTICIPANTS

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format	Service Population	Current Avg. Res. Usage	Res. Connection Fee
CHURCHILL	Fallon	City of Fallon	7/1/2006	Monthly	$15.00	$16.05	$31.05	Uniform	8,600	11	$4,000
CLARK	Henderson	City of Henderson	01/01/2015	Monthly	$12.45	$19.46	$31.91	Inclining	285,000	18	$1,600
	Moapa Valley	Moapa Valley Water District	12/02/2011	Monthly	$29.79	$24.23	$54.02	Inclining	8,500	23	$1,982
	Mesquite & Bunkerville	Virgin Valley Water District	04/20/2015	Monthly	$35.00	$20.50	$55.50	Inclining	19,579	14	$5,770
DOUGLAS	Gardnerville	Gardnerville Water Company	01/01/2013	Bi-monthly	$14.50	$9.31	$23.81	Inclining	5,000	16	$11,455
	Stateline	Kingsbury General Improvement District	07/01/2012	Monthly	$62.92	$28.80	$91.72	Inclining	2,800		
	Zephyr Cove	Round Hill General Improvement District	11/19/2013	Monthly	$57.00		$57.00	Inclining	1,300	10	
PERSHING	Lovelock	Lovelock Meadows Water District	07/01/2014	Monthly	$33.60	$9.20	$42.80	Uniform	5,619	11	$2,500
WASHOE	Incline Village	Incline Village General Improvement District	05/19/2014	Monthly	$27.54	$14.52	$42.06	Inclining	9,313	8	$4,740
	Reno & Sparks	Truckee Meadow Water Authority	01/24/2014	Monthly	$18.54	$24.22	$42.76	Inclining	385,000	16	$7,500

CALIFORNIA WASTEWATER SURVEY PARTICIPANTS

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format*	Service Population	Res. Connection Fee
ALAMEDA	Dublin & San Ramon	Dublin San Ramon Services District	07/01/2013	Bi-monthly	$30.21		$30.21	F	78,300	$16,656
AMADOR		Amador Water Agency	02/01/2015	Monthly	$86.68		$86.68	F	37,764	$6,162
CALAVERAS	Valley Springs	Valley Springs PUD	04/01/2006	Monthly	$49.50	$1.13	$50.63	F + V	900	
EL DORADO	Placerville	El Dorado Irrigation District	01/01/2014	Bi-monthly	$35.98	$38.78	$74.76	F + V	100,000	$13,119
	South Lake Tahoe	South Tahoe PUD		Quarterly	$33.34		$33.34	F	33,000	
HUMBOLDT	McKinleyville	McKinleyville Community Services District	07/01/2014	Monthly	$17.57	$14.90	$32.47	F + V	15,200	$4,817
IMPERIAL	Calexico	City of Calexico	08/01/2008	Monthly	$38.08		$38.08	F + V	40,516	
INYO	Bishop	City of Bishop	07/01/2014	Monthly	$30.00		$30.00	F	3,879	$2,000
KERN	Mojave	Mojave Public Utility District	03/01/2015	Monthly	$13.13		$13.13	F	4,000	$3,000
LAKE	Clearlake Oaks	Clearlake Oaks County Water District	07/01/2012	Monthly	$45.93	$3.10	$49.03	F + V		$6,000
	Lacosan 3	Lake County Special District	12/03/2010	Bi-monthly	$28.34		$28.34	F	8,940	$9,435
	Middletown	Lake County Special District	09/14/1995	Bi-monthly	$16.30		$16.30	F	1,132	$4,876
	S Lakeport	Lake County Special District	12/15/2011	Bi-monthly	$53.95		$53.95	F	24	
	Corinian Bay	Lake County Special District	09/14/1995	Bi-monthly	$20.00		$20.00	F	191	$4,776
	Lacosan 1	Lake County Special District	12/03/2010	Bi-monthly	$26.03		$26.03	F	14,596	$10,345
	Kelseyville	Lake County Special District	08/24/2006	Bi-monthly	$31.51		$31.51	F	2,625	$4,876
LOS ANGELES	Inglewood	City of Inglewood	10/01/2012	Monthly	$7.50		$7.50	F		
	La Verne	City of La Verne	07/01/2014	Bi-monthly	$4.50		$4.50	F	32,211	$1,700
	Santa Monica	City of Santa Monica	05/01/2015	Bi-monthly		$46.30	$46.30	V	92,185	$2,239
	Long Beach	Long Beach Water Department	10/01/2014	Monthly	$7.80	$3.61	$11.41	F + V	469,428	
MARIPOSA	Mariposa	Mariposa Public Utility District	10/15/2014	Monthly	$29.00		$29.00	F	2,000	$1,050
MENDOCINO	Ukiah	City of Ukiah	07/01/2011	Monthly	$62.44	$24.50	$86.94	F + V	16,185	$-
MERCED	Hilmar	Hilmar County Water District	07/01/2014	Monthly	$26.35		$26.35	F	5,000	$5,918
	Winton	Winton Water and Sanitary Dist	07/01/2011	Monthly	$49.16		$49.16	F	8,500	$2,400
MONO	Bridgeport	Bridgeport Public Utility District	11/18/2006	Monthly	$78.54		$78.54	F	425	
NAPA	Napa	Napa Sanitation District	07/01/2014	Annually	$39.15		$39.15	F	78,500	$8,723
ORANGE	Brea	City Of Brea	12/01/2014	Monthly	$7.88		$7.88	F	40,963	$3,588
	Santa Ana	City of Santa Ana	03/01/2015	Bi-monthly	$0.50	$3.04	$3.54	F + V	330,000	
	Laguna Niguel	Moulton Niguel Water District	04/01/2015	Monthly	$22.68		$22.68	F	171,000	
PLACER	Olympic Valley	Squaw Valley Public Service District	07/01/2014	Annually	$42.42		$42.42	F	926	
	Tahoe City	Tahoe City Public Utility District	01/01/2015	Monthly	$38.41		$38.41	F	9,331	$1,000
PLUMAS	Portola	City of Portola	08/01/2014	Monthly	$40.30		$40.30	F + V	2,000	$5,324
	Quincy	East Quincy Services District	07/01/2015	Monthly	$55.49		$55.49	F	2,500	$3,378

** F = Fixed, V = Variable, F+V = Fixed Plus Variable*

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format*	Service Population	Res. Connection Fee
PLUMAS	Greenville	Indian Valley CSD	06/01/2006	Monthly	$18.00		$18.00	F	3,000	
	Quincy	Quincy Community Services District	07/01/2014	Monthly	$45.82		$45.82	F	1,728	$4,339
RIVERSIDE		Coachella Valley Water District	08/01/2010	Annually	$24.50		$24.50	F	320,000	$4,851
	Lake Elsinore, Murrieta, Wildomar	Elsinore Valley Municipal Water District	07/01/2013	Monthly	$43.50		$43.50	F	128,232	$8,621
	Hemet & San Jacinto	Lake Hemet MWD	01/01/2014	Monthly	$30.00		$30.00	F	50,000	$3,200
	Temecula	Rancho California Water Agency	06/12/2014	Monthly	$38.75		$38.75	F	147,600	$8,203
SACRAMENTO	Rancho Murieta	Rancho Murieta CSD	07/01/2014	Monthly	$45.32		$45.32	F	5,488	
SAN BENITO	Hollister	Sunnyslope County Water District	12/21/2014	Monthly	$95.93	$56.40	$152.33	F + V	19,189	$17,925
SAN BERNARDINO	Arrowbear Lake	Arrowbear Park County Water District	12/19/2014	Monthly	$35.00		$35.00	F	1,349	$2,850
	Needles	City of Needles	11/01/2014	Monthly	$39.24		$39.24	F	3,600	$1,570
	Upland	City of Upland	07/01/2014	Bi-monthly	$21.89		$21.89	F	75,670	$6,412
	Spring Valley Lake	County of San Bernardino - CSA 64	07/01/2014	Bi-monthly	$45.90		$45.90	F	12,682	$1,826
	Hesperia	Hesperia Water District	01/02/2008	Bi-monthly	$22.99		$22.99	F	92,000	
	Lake Arrowhead	Lake Arrowhead Community Services District	02/01/2015	Monthly	$48.28		$48.28	F	15,000	$9,033
	Running Springs	Running Springs Water District	07/01/2014	Monthly	$36.32	$6.09	$42.41	F + V	4,862	$5,646
SAN DIEGO	Carlsbad	Carlsbad Municipal Water District	01/01/2015	Monthly	$26.03		$26.03	F	84,838	$842
	San Marcos	Vallecitos Water District	07/01/2014	Monthly	$37.45		$37.45	F	97,481	$9,039
	Valley Center	Valley Center Municipal Water District	02/01/2013	Monthly	$51.20		$51.20	F	25,295	$8,935
SAN LUIS OBISPO	Cambria	Cambria Community Services District	01/01/2012	Bi-monthly	$32.52	$18.43	$50.95	F + V	7,000	$9,000
	San Miguel	San Miguel CSD	06/01/2013	Monthly	$37.09		$37.09	F	2,300	$8,332
	Templeton	Templeton Community Services District	11/01/2014	Monthly	$34.36		$34.36	F	7,674	$5,441
SAN MATEO	Redwood City	City of Redwood City	07/01/2014	Bi-monthly	$68.77		$68.77	F	86,000	$3,096
SANTA BARBARA	Santa Barbara	City of Santa Barbara	07/01/2014	Monthly	$15.70	$27.30	$43.00	F + V	92,756	$4,977
	Santa Maria	City of Santa Maria	07/01/2014	Monthly	$17.42		$17.42	F	101,000	
	Solvang	City of Solvang	10/20/2014	Monthly	$34.10		$34.10	F	5,363	$7,010
	Vandenberg Village	Vandenberg Village CSD	07/01/2014	Monthly	$72.20		$72.20	F	6,712	$5,347
SANTA CLARA	Milpitas	City of Milpitas	07/28/2014	Bi-monthly	$43.47		$43.47	F	70,000	$1,908
	Palo Alto	City of Palo Alto	07/01/2012	Monthly	$29.31		$29.31	F	66,861	$10,500
SANTA CRUZ	Boulder Creek	San Lorenzo Valley Water District	01/01/2015	Monthly	$149.00		$149.00	F	28,205	
SHASTA	Anderson	City of Anderson	10/01/2014	Monthly	$21.37	$14.50	$35.87	F + V	10,000	
SISKIYOU	Weed	City of Weed	03/01/2015	Monthly	$24.72		$24.72	F	3,000	
	McCloud	McCloud Community Services District	07/01/2014	Monthly	$40.10		$40.10	F	1,300	
SOLANO	Vacaville	City of Vacaville	03/01/2014	Bi-monthly	$56.61	$8.40	$65.01	F + V	94,000	$9,265
SONOMA	Santa Rosa	City of Santa Rosa	01/01/2015	Monthly	$21.60	$99.30	$120.90	F + V	180,000	
	Forestville	Forestville Water District	07/01/2014	Annually	$119.80		$119.80	F	2,500	$11,743

** F = Fixed, V = Variable, F+V = Fixed Plus Variable*

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format*	Service Population	Res. Connection Fee
STANISLAUS	Waterford	City of Waterford	07/01/2014	Monthly	$30.51		$30.51	F	312	
SUTTER	Yuba City	City of Yuba City	09/01/2014	Monthly	$38.39		$38.39	F	65,000	
TUOLUMNE	Sonora	Tuolumne Utilities District	02/23/2010	Bi-monthly	$35.59		$35.59	F	44,000	$3,800
VENTURA	Oxnard	City of Oxnard	10/01/2013	Monthly	$21.07	$13.85	$34.92	F + V	196,720	$4,734
	Port Hueneme	City of Port Hueneme	07/01/2012	Bi-monthly	$36.00		$36.00	F + V	22,500	
YOLO	Winters	City of Winters	01/01/2015	Monthly	$45.00	$16.20	$61.20	F + V	6,950	

** F = Fixed, V = Variable, F+V = Fixed Plus Variable*

NEVADA WASTEWATER SURVEY PARTICIPANTS

County	Service Area	Water Service Provider	Effective Date	Billing Frequency	Fixed Charge	Commodity Charge	Total Charge	Rate Format*	Service Population	Res. Connection Fee
CHURCHILL	Fallon	City of Fallon	03/01/2015	Monthly	$30.00		$30.00	F	8,600	$3,000
CLARK	Henderson	City of Henderson	01/01/2015	Monthly	$25.78		$25.78	F	285,000	$1,800
DOUGLAS	Zephyr Cove	Round Hill General Improvement District	11/19/2013	Monthly	$54.00		$54.00	F	1,300	
WASHOE	Incline Village	Incline Village General Improvement District	05/19/2014	Monthly	$46.13	$20.10	$66.23	F + V	9,313	$7,100

** F = Fixed, V = Variable, F+V = Fixed Plus Variable*

BACKGROUND ON CA-NV AWWA & RFC

THE CALIFORNIA-NEVADA SECTION is the largest regional section of the American Water Works Association with about one-tenth of the AWWA membership. Since 1881, AWWA has led the development and dissemination of water industry guidelines, standards, procedures, training and other information.

To fulfill its mission of leading, educating, and serving the drinking water community to ensure public health and to provide safe and sufficient water for all, CA-NV AWWA offers a number of educational opportunities such as conferences, workshops, Water Education Seminars, and the Water College. CA-NV AWWA also manages six professional certification programs serving over 20,000 individuals, helping to ensure drinking water safety for over 35 million people. The Section publishes a quarterly journal, *Source*, and helps disseminate technical input on drinking water issues to state regulators and legislators.

RAFTELIS FINANCIAL CONSULTANTS, INC. (RFC) was founded in 1993 to provide services that help utilities function as sustainable organizations while providing the public with clean water at an affordable price. With this goal in mind, RFC has grown to become the largest and one of the most respected utility financial and management consulting practices in the nation. RFC has experience providing these services to hundreds of utilities across the country and abroad, allowing them to provide their clients with innovative and insightful recommendations that are founded on industry best practices. Throughout their history, they have maintained a strict focus on the financial and management aspects of utilities, building a staff with knowledge and skills that are extremely specialized to the services that they provide, and thus allowing them to provide their clients with independent and objective advice.

RFC personnel have been conducting the comprehensive national *Water and Wastewater Rate Survey* biennially since 1986 and have co-published the survey with AWWA since 1996. The survey has extensive data on utilities across the county. The 2014 *Water and Wastewater Rate Survey* can be obtained on the AWWA website.

ADDITIONAL COPIES OF THE SURVEY CAN BE OBTAINED BY CONTACTING:

CA-NV AWWA at 909.291.2113
10435 Ashford Street, 2nd Floor
Rancho Cucamonga, CA 91730

We welcome any suggestions for enhancing the survey as a benchmarking tool for the utilities we serve. For questions or comments, contact Sudhir Pardiwala or Kevin Kostiuk.

SUDHIR PARDIWALA
P: 626.583.1894 | **F:** 626.583.1411
E: spardiwala@raftelis.com

KEVIN KOSTIUK
P: 213.262.9309 | **F:** 626.583.1411
E: kkostiuk@raftelis.com

American Water Works Association
California-Nevada Section

www.ca-nv-awwa.org
10435 Ashford Street
Rancho Cucamonga, CA 91730

RAFTELIS
FINANCIAL CONSULTANTS, INC.

www.raftelis.com
445 S. Figueroa Street, Suite 2270
Los Angeles, CA 90071