CITY OF DALLAS
OREGON

Public Works Committee

COMMITTEE

Micah Jantz, Chair
Nancy Adams
Kim Fitzgerald
Michael Schilling
Debbie Virden

AGENDA

Monday, January 22, 2024
4:00 pm

Council Chambers
Dallas City Hall
187 SE Court St
Dallas, OR 97338

A. Roll Call

B. Approve October 23, 2023 Meeting Minutes p.2

C. Water Base Rate Discussion p.3

D. Adjournment

MEETING MINUTES

Dallas Public Works Committee
Monday, October 23, 2023

Committee Chair Kim Fitzgerald called the Public Works Committee meeting to order on Monday, October 23, 2023, at 4:01 pm.

ROLL CALL

Council Members Present: Councilor Carlos Barrientos, Councilor Kirsten Collins, Councilor Kim Fitzgerald, and Councilor Michael Schilling

Council Members Absent: Councilor David Shein

Also Present: City Manager Brian Latta, Assistant City Manager Emily Gagner, Police Chief Tom Simpson, Fire & EMS Chief April Wallace, Public Works Director Gary Marks, City Attorney Lane Shetterly and City Recorder Kim Herring.

APPROVAL OF June 26, 2023 MEETING MINUTES

It was moved by Councilor Schilling and seconded by Councilor Barrientos to approve the June 26, 2023 minutes as presented. The vote was taken and passed with a vote of 4-0.

Illicit Discharge Program and Ordinance Introduction

Elizabeth Sagmiller, TMDL consultant, gave a presentation on the scope of an illicit discharge program and the process that will be needed to implement and enforce it. This item will return to the agenda for further discussion in February.

ADJOURNMENT: 4:20 pm

Respectfully Submitted,

Kim Herring

CITY OF DALLAS
OREGON

PUBLIC WORKS COMMITTEE
STAFF REPORT

MEETING DATE:	January 22, 2024
AGENDA ITEM NO.	C
TOPIC:	Report on City Water Rate Structures
PREPARED BY:	Gary Marks, Public Works Director
APPROVED BY:	City Manager
ATTACHMENTS:	Exhibit A – Excerpt of 2013 Utility Rate Study Exhibit B – EPA Article on Water Rates Exhibit C – Rates of Comparison Cities

RECOMMENDED ACTION:
This report is for information only. No action is needed.

BACKGROUND:
Many cities, including the City of Dallas, use a combination or two-tiered uniform rate structure to calculate water bills.

The first tier is the fixed fee base, commonly referred to as the base rate, which is a fixed amount charged to all customers. This tier generally covers the costs of maintaining, repairing and upgrading the system's infrastructure. This includes the upkeep and maintenance of water reservoirs, the water intake facility, the water treatment plant, pumping stations and the pipe distribution system. This part of the rate structure can also be used to repay loans and bonds used to build and improve the system. The basis for the fixed fee tier is to assure that when a customer needs water the system is ready to provide it.

The second tier is the water usage charge, commonly referred to as the consumption rate, which is based on how much water is used by a customer. This charge covers the costs of the treatment process including staffing and chemical treatment, and the electrical power needed to provide safe drinking water. This volume-based rate tier is charged based on the number of water units consumed by a customer during a billing cycle. For the City of Dallas, a water unit is equal to 750 gallons.

Exhibit A, attached to this report, is an excerpt of the 2013 Utility Rate Study and SDC Methodology Update. Staff chose only to include the section of this report discussing water

rates. This report describes our rate structure as a uniform rate structure including a base rate and consumption rate, and for what purposes those rates are designed to pay.

Exhibit B, attached to this report, is an article published by the US Environmental Protection Agency on the topic of *Understanding Your Water Bill*. It provides good general information on different rates structure types, including the uniform rate used by the City of Dallas.

Exhibit C, attached to this report, is a utility rate comparison of seven (7) Willamette Valley area cities. In each case, a two-tier water uniform rate structure, as described above, is used. In some cases, cities charge base fees based on the size of the meter service provided to a property.

SUMMARY TIMELINE:
January 22, 2024 Public Works Committee.

FISCAL IMPACT:
None.

RECOMMENDED MOTION:
This report is for information only. No action is needed.

ATTACHMENTS:
Exhibit A – Excerpt of 2013 Utility Rate Study
Exhibit B – EPA Article on Water Rates
Exhibit C – Rates of Comparison Cities

Utilities Rate Study and SDC Methodology Update

April

2013

Prepared for:

THE CITY OF DALLAS OREGON

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Analysis Section

Water Rates

Analysis of Water System Revenue Requirements

This analytical task determines the amount of revenue needed from water rates. This is driven by utility cash flow or income requirements, constraints of bond covenants, and specific fiscal policies related to the water utility. Based on three years of actual financial records (i.e., fiscal 2010 through 2012), and for the current budget year 2013, a base case analysis was developed. This case is predicated on a number of planning assumptions. These planning assumptions are discussed in detail below.

For the current budget year (fiscal 2013), it is forecasted that the water utility will generate sufficient revenues from rates, charges and fees to meet its obligations and produce an unappropriated ending balance in the water operating fund of $512,761. The beginning balance for the water operating fund in this same fiscal year was $513,778. In order to establish and maintain cash balances in the water operating fund while continuing to support the funding of future capital requirements, a general water rate increase of 3.05% in fiscal 2014 is required. Based on discussions with the City Staff, this general rate increase should be implemented on June 1, 2013.

For the forecast of revenue requirements, the following assumptions were made based on discussions with City staff and the URAC:

Inflation in costs and growth in the customer base – In order to accurately reflect likely future conditions, the revenue requirements model was programmed to allow for inflation and cost escalation factors by budget line item. Per guidance from City staff, the following factors were applied for estimating future cost escalation:

- All direct labor line items – 3.0% per year
- Pension plan contributions (City cost) – 5.0% per year
- Health insurance premiums (City cost) – 8.0% per year
- Professional services (OMI contract) – 3.0% per year
- All other operating expense line items – 3.0% per year
- The growth forecast expressed in the annual increase in 3/4" meters is estimated to be 0.50% per year over the five (5) year forecast horizon.

Capital Improvement Plan Funding - In the current fiscal year, total water system capital improvement costs are estimated to be $128,750, and consist of $51,500 for small diameter pipe replacements, and $77,250 for the replacement of an influent pump at the water treatment plant. The current budget assumes these capital improvement costs will be funded from cash on hand.

Between fiscal 2014 and 2017, the City's water system capital improvement plan calls for the investment of $4,008,769. The water system financial plan calls for all of these costs to be funded from the proceeds of future revenue bonds (one bond in each future fiscal year). The resulting debt service on these bonds is to be paid from water rates. The key planning assumptions for the issuance of these future water system revenue bonds are:

- Life of each issuance – 20 years
- Interest rate – 4.50%

- Issuance costs – 1.0% of gross borrowings
- Coverage requirement – 1.25 times annual debt service
- Reserve requirement – one year's annual debt service

Under the current water system financial plan, by the end of fiscal 2016, the City will add an additional $321,233 of annual revenue bond debt service to the water system revenue requirements. The debt sizing cash flows and resulting debt service calculations are shown below in Table 4.

Table 4 - Forecast of Future Water System Borrowings and Resulting Debt Service

Capital Improvements Financing	2013	2014	2015	2016	2017	2018
Capital Costs to be Funded	128,750	1,750,485	1,821,212	243,860	193,212	-
less: Contributions from SDCs						
less: Contributions From Construction Fund bal						
less: Contributions From Utility Rates	128,750				193,212	-
less: Developer Contributions						
Amount to be Financed	-	1,750,485	1,821,212	243,860	-	-
Interim Borrowing:						
BANs Issued:	-	-	-	-	-	-
less: Borrowing Cost	-	-	-	-	-	-
less: Interest Payments	-	-	-	-	-	-
plus: Interest Earnings	-	-	-	-	-	-
Net Available from BANS	-	-	-	-	-	-
Long-term Borrowing:						
Revenue Bonds:						
Amount Borrowed	-	1,917,029	1,994,485	267,062	-	-
less: Financing Cost	-	19,170	19,945	2,671	-	-
less: Reserve Funding	-	147,374	153,328	20,531	-	-
less: Refunding of BANs	-	-	-	-	-	-
Net Funds from Revenue Bonds	-	1,750,485	1,821,212	243,860	-	-
General Obligation Bonds:						
Amount Borrowed	-	-	-	-	-	-
less: Financing Cost	-	-	-	-	-	-
less: Reserve Funding	-	-	-	-	-	-
less: Refunding of BANs	-	-	-	-	-	-
Net Funds from G.O. Bonds	-	-	-	-	-	-
New Annual Debt Service:						
Debt Service	-	147,374	300,702	321,233	321,233	321,233
Coverage	-	-	-	-	-	-
Reserve Funding	-	-	-	-	-	-

It should be noted, the water system financial plan also assumes the City will continue to budget $50,000 per year (adjusted for inflation) on water projects. It is assumed these project costs will be funded with cash that is generated from water rates, and is accounted for in the revenue requirements calculations. These costs are for service installations, small works construction, minor equipment and tools, and the funding for an ongoing meter replacement program. For the forecast, we have used this figure as the starting point and adjusted it for inflation (3.0% per year) over the forecast period. We have not budgeted for any costs in the other minor capital line items.

Operating Costs in Excess of Inflation – In most rate studies, there are certain operating cost categories that tend to grow in excess of the general price index. We have identified two such categories in this analysis: a) the City's pension costs, and b) health care premiums. These cost categories have been accounted for in the revenue requirements model. We have not identified any other areas of concern for this forecast, but the City should monitor the cost structure of the water utility on an ongoing basis. Three key areas of future concern are:

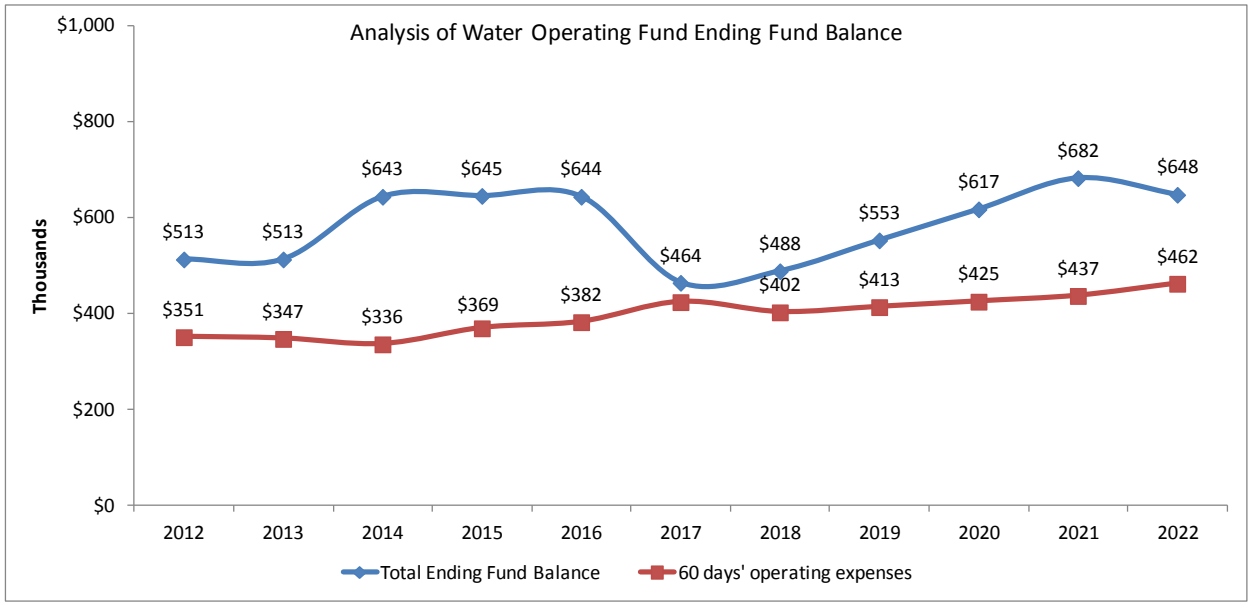
Professional services costs – The water distribution system maintenance contract with OMI is a "cost plus" contract, and has cost increase limits over the term of the contract. Within the five year forecast horizon of the current water system financial plan, this contract is due for review and renegotiation. If the future negotiations result in cost increases in excess of 3.0% per year, the City will have to revisit the water rate forecast and determine potential impacts on water rates

Administrative charges – We have not estimated or accounted for any unusual increases in City/General Fund administrative charges. The City provides administrative services such as accounting, legal, and billing to the water system. Based on proposed changes in the commodity charge rate structure as a result of our recommendations to the City Council, the City may incur additional costs for billing software updates. While modest, we do not know exactly how much these costs will be, but estimates have been included within the operations and maintenance expense forecast. The City should monitor this situation.

Staffing Costs – We have not planned or budgeted for any additional labor. If the water utility does add staff, these costs will impact the current revenue requirements forecast.

Modeling for Contingencies, Reserves, and Ending Fund Balances - The financial engine of the water utility is the water operating fund. Because the utility cash finances all of its operations, the ending fund balance in the water operating fund is in effect the contingency fund for the utility. Over the past three years, the ending fund balance in the Water Operating Fund has been declining, primarily due to several years of higher than normal operating expenses. For planning purposes, we are expecting that the Water Operating Fund will end all forecast years with a target ending fund balance in excess of sixty days of operating expenses. This target balance gives the water utility enough contingency to fund unforeseen operating cost spikes. The ten year forecast of targeted Water Operating Fund balances and operating reserve requirements is shown below in Figure 1.

Figure 1 - Forecast of Water Operating Fund Balances and Operating Reserve Requirements



Revenue Requirements Forecast & Results

All of the above cost elements are contained in the revenue requirements model which is the platform for the "base case" forecast. The base case assumes the utility will fund the projects in the 2013 Water System Capital Improvement Plan (discussed above). Also, the utility would fund the operating costs as adjusted for inflation. This base case resulted in the following forecast of water system revenue requirements (Table 5).

Table 5 – Base Case Forecast of Water System Revenue Requirements

Dallas Water Financial Forecast Model
Projection of Water System Revenue Requirements

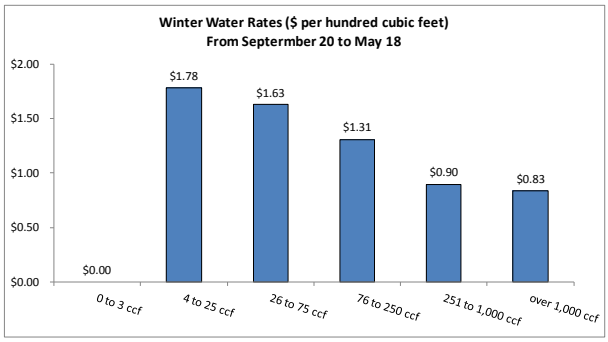
	Budget	Forecast				
	2013	2014	2015	2016	2017	2018
Projection of Cash Flow:						
Revenues:						
Total licenses and permits	5,000	5,150	5,305	5,464	5,628	5,796
Total Service Charges	2,057,500	2,057,500	2,126,483	2,198,943	2,271,963	2,346,926
Total interest earned	13,000	4,102	5,147	5,162	5,148	3,713
Total other financing sources	-	-	-	-	-	-
Total miscellaneous income	36,224	37,311	38,430	39,583	40,770	41,994
Subtotal gross operating revenues	2,111,724	2,104,063	2,175,365	2,249,152	2,323,509	2,398,429
Operations & Maintenance Expense:						
Total personal services	407,000	426,960	448,139	470,623	494,504	519,883
Total materials and services	1,091,500	1,124,245	1,157,972	1,192,712	1,228,493	1,265,348
Total debt service	523,192	495,341	648,669	669,201	669,200	669,200
Total capital outlay	50,000	51,500	53,045	54,636	56,275	57,964
Transfers(excluding transfers to the construction and bond funds)	-	-	-	-	-	-
Total operations and maintenance expense	2,071,692	2,098,046	2,307,825	2,387,171	2,448,472	2,512,394
(Use)/replacement of fund balance	40,032	75,000	(60,000)	(65,000)	(50,000)	(40,000)
Net Cash	-	(68,983)	(72,460)	(73,020)	(74,963)	(73,965)
Net Deficiency/(Surplus)	-	68,983	72,460	73,020	74,963	73,965
Test of Coverage Requirement:						
Gross Revenues:						
Operating revenues	2,111,724	2,104,063	2,175,365	2,249,152	2,323,509	2,398,429
System Development Charges	60,000	60,300	60,602	60,905	61,209	61,515
Total Gross Revenues	2,171,724	2,164,363	2,235,966	2,310,056	2,384,718	2,459,944
Operating Expenses:						
Total personal services	407,000	426,960	448,139	470,623	494,504	519,883
Total materials and services	1,091,500	1,124,245	1,157,972	1,192,712	1,228,493	1,265,348
Debt service on loans	523,192	347,967	347,967	347,968	347,967	347,967
Transfers(excluding transfers to the construction and bond funds)	-	-	-	-	-	-
Transfers to/from the rate stabilization account	-	-	(60,000)	(65,000)	(50,000)	(40,000)
Total Operating Expenses	2,021,692	1,899,172	1,894,078	1,946,302	2,020,964	2,093,198
Net Revenues	150,032	265,191	341,888	363,754	363,754	366,746
Debt Service:						
Debt Service on Existing Refunding Bonds	-	-	-	-	-	-
Debt Service on New Serial Revenue Bond Debt	-	147,374	300,702	321,233	321,233	321,233
Total debt service	-	147,374	300,702	321,233	321,233	321,233
Coverage Recognized	N/A	1.80	1.14	1.13	1.13	1.14
Coverage Required	1.25	1.25	1.25	1.25	1.25	1.25
Net Deficiency/(Surplus)	N/A	(80,974)	33,989	37,787	37,787	34,795
Projection of Revenue Sufficiency and Forecasted Rates:						
Maximum Deficiency	-	68,983	72,460	73,020	74,963	73,965
Percent Increase Required Over Current Rate Revenues	0.00%	3.35%	3.41%	3.32%	3.30%	3.15%
Five Year Average Increase in Revenue Requirements		3.31%	3.31%	3.31%	3.31%	3.31%
Revenues Recovered From Existing Rates and Charges:	2,057,500	2,057,500	2,126,483	2,198,943	2,271,963	2,346,926
add: Revenues Recovered From Rate Increase	-	68,983	72,460	73,020	74,963	73,965
Total Revenues Recovered From Rates & Charges after Increase	2,057,500	2,126,483	2,198,943	2,271,963	2,346,926	2,420,892

Table 5 shows, forecasted annual changes in water system revenue requirements are in line with general inflation assumptions and average approximately 3.31% per year from fiscal 2014 through fiscal 2018.

Existing Water Rates and URAC Recommended Policy Changes

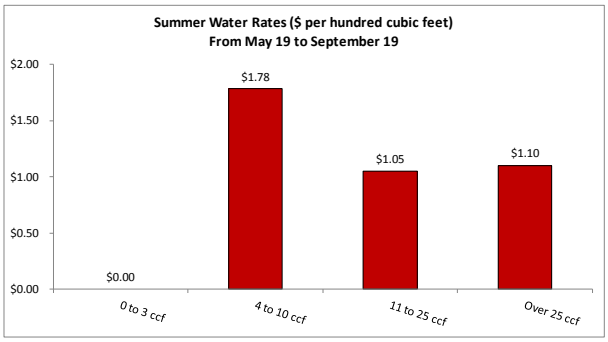
For at least the past ten (10) years, the City has used a "split season-declining block" structure for water rates. The current schedule of water rates is shown graphically:

Winter Water Rates - $/Ccf



- First 3 ccf included in the monthly base fee
- Winter period is from September 20 to May 18
- Most customers consume less than 25 Ccf per month in the winter

Summer Water Rates - $/Ccf



- Summer, 2012 consumption frequency distn.:

Usage Blocks (ccf)		% by Block
Block	Number of Bills	
Zero to 3	919	10%
4 to 10	2,613	28%
11 to 25	3,541	38%
Over 26	2,168	23%
	9,241	100%

In winter (September 20th to May 18th), all customers pay usage fees on a sliding scale ranging from $1.78 to $0.83 per hundred cubic feet (ccf) depending on their respective consumption. The City does include 3 ccf as an allowance included in the base charge. In the winter period, there are five (5) distinct water usage pricing blocks. An analysis of City billing records for calendar 2012 indicates that during the winter period, roughly 90% of all customers consumed water in the 4 to 25 ccf pricing block. Even though there are five distinct and declining pricing blocks for the winter period, almost all of the consumption occurred in the highest priced first (4 – 25 ccf) block.

The summer season (May 19th to September 19th) paints a different picture. The pricing for summer water is different than the pricing for winter water. In summer, water is priced in only three blocks ranging from $1.78 per ccf for the first block, to $1.05 per ccf for the second block, and $1.10 per ccf for the third block. City billing record for the summer of 2012 show a majority of customers (i.e., 61%) had monthly water consumption in the last two "discounted" pricing blocks.

This summer 2012 consumption history was shared with City staff and the members of the URAC and there was considerable discussion concerning the policy of having declining block water rates. In their February and March, 2013 meetings, the members of the URAC directed City staff to develop a table of the pros and cons of the current declining block water rate structure. The results are shown below in Table 6.

Table 6 - URAC Pros and Cons of the Current Declining Block Water Rate Structure

Pros	Cons
• Customers are used to it	• Does not promote conservation
• Promotes water sales in the summer	• Exacerbates peak day and peak month demand factors
• Encourages green turf and home gardens	• Compels the City to invest more in the water system to meet peak demands
	• Low consumption customers subsidize high consumption customers
	• Puts environmental pressure on the City's water shed

After a thorough discussion of the pros and cons of the current water rate structure, the URAC agreed that the negative policy implications of the declining block rate structure outweighed the benefits. The URAC spent considerable time analyzing and discussing the merits of this rate policy and is recommending the City move away from this rate structure. The specific URAC recommendations to the Council for an alternative water rate structure are:

- Eliminate the current split season, declining block water rate structure
- Continue to have a monthly base fee that does not vary by meter size
- Replace the split season, declining block commodity rates with a uniform average commodity rate that remains constant across the entire range of water consumption.
- Establish differentiated uniform commodity rates for residential and commercial customer classes. These differentiated commodity rates are based on each class's respective contribution to peak day demand. The estimated commodity rates for FY14 are:
  - ❖ Residential - $1.7262 per ccf
  - ❖ Commercial - $1.3387 per ccf
- Establish a policy on the development of industrial water rates that is flexible and will allow the City to attract and retain an industrial customer base

The URAC alternative became the base case for the water rate analysis. The ratemaking methodology that was used is called the "base-extra capacity method", and is consistent with industry standards in water rate making. Under this methodology, costs of service are separated into three primary cost components: (1) base costs, (2) extra capacity costs, and, (3)customer costs.

Base costs are those that tend to vary with the total quantity of water used plus those operations and maintenance (O&M) expenses and capital costs associated with service to customers under average load conditions, without the elements of cost incurred to meet water use variations and resulting peaks in

demand. Base costs include O&M expenses of supply, treatment, pumping, and distribution facilities. Base costs also include capital costs related to water plant investment associated with serving customers to the extent required for a constant, or average, annual rate of demand/usage.

Extra capacity costs are those associated with meeting rate of use requirements in excess of average and include O&M expenses and capital costs for system capacity beyond that required for average rate of use. These costs have been subdivided into costs necessary to meet maximum-day extra demand, and maximum-hour demand in excess of maximum day demand.

Customer costs comprise those costs associated with serving customers, irrespective of the amount or rate of water use. They include meter reading, billing, and customer accounting and collection expense, as well as maintenance and capital costs related to meters and services.

The resulting cost of service-based forecast of URAC recommended water rates is shown below in Table 7. The complete contents of the water rate model is contained in Appendix A to this report.

Table 7 - Five Year Forecast of URAC Recommended Water Rates

City of Dallas, Oregn
Water System Rate Study Update 2012
Proposed Schedule of Water Rates

Line Item Description	Budget 2013	Forecast 2014	2015	2016	2017	2018
Inside City:						
Base charge (monthly)	$ 15.7536	$ 16.1377	$ 16.5438	$ 16.9241	$ 17.2987	$ 17.6202
Use (commodity) charge						
Residential						
Base	1.0022	1.0352	1.0697	1.1057	1.1432	1.1825
Extra capacity - maximum day	0.5624	0.5803	0.5989	0.6183	0.6385	0.6596
Extra capacity - maximum hour	0.1080	0.1107	0.1135	0.1163	0.1192	0.1222
Total	1.6726	1.7262	1.7820	1.8403	1.9009	1.9643
Commercial/Industrial:						
Base	1.0022	1.0352	1.0697	1.1057	1.1432	1.1825
Extra capacity - maximum day	0.2218	0.2288	0.2362	0.2438	0.2518	0.2601
Extra capacity - maximum hour	0.0728	0.0746	0.0765	0.0784	0.0803	0.0823
Total	1.2967	1.3387	1.3823	1.4279	1.4754	1.5249
Wholesale:						
Base	N/A	N/A	N/A	N/A	N/A	N/A
Extra capacity - maximum day	N/A	N/A	N/A	N/A	N/A	N/A
Extra capacity - maximum hour	N/A	N/A	N/A	N/A	N/A	N/A
Total	-	-	-	-	-	-
Outside City:						
Base charge (monthly)	$ 31.51	$ 32.28	$ 33.09	$ 33.85	$ 34.60	$ 35.24
Use (commodity) charge						
Residential:						
Base	1.5032	1.5528	1.6045	1.6585	1.7149	1.7738
Extra capacity - maximum day	0.8436	0.8704	0.8983	0.9274	0.9578	0.9894
Extra capacity - maximum hour	0.1621	0.1661	0.1702	0.1745	0.1788	0.1832
Total	2.5088	2.5893	2.6731	2.7604	2.8514	2.9464
Commercial/Industrial:						
Base	1.5032	1.5528	1.6045	1.6585	1.7149	1.7738
Extra capacity - maximum day	0.3327	0.3433	0.3543	0.3658	0.3777	0.3902
Extra capacity - maximum hour	0.1092	0.1119	0.1147	0.1176	0.1205	0.1235
Total	1.9451	2.0080	2.0735	2.1418	2.2131	2.2874

Drought and Conservation Based Rates

A key objective for this project was to develop an alternative water rate structure that promotes dramatic reductions in water use during drought conditions. The first step in developing this alternative rate structure was to determine which classes of customers drive peak water demand in the City. The consultant team compiled historical water consumption data for all water accounts. This historical consumption data was downloaded from City billing records. Based on this data, it was determined that 84% of all water sold in the full calendar year 2011 originated from the residential customer class. The balance of water sales came from the commercial customer class (4%), and City facilities usage (parks, aquatic center, etc.) at 12%. This clearly shows the residential class is driving average and peak water demand in the City.

The second step was to standardize the City's peak demand and compare that standardized demand statistic to other western Oregon communities. In the municipal water industry, the standard frame of reference to quantify peak demand is the peaking factor. This factor is the ratio of maximum month daily demand to average annual daily demand. For all of calendar 2011, the Dallas peaking factor was calculated as follows:

Maximum month (August, 2011) daily demand ..... 4,717 ccf
Average annual daily demand ..... 2,212 ccf
Max month daily demand ÷ Ave annual daily demand 2.1327

The comparison of Dallas' 2011 peaking factor to other western Oregon communities is shown below in Figure 2.

Figure 2 - Dallas Peaking Factor Compared to Other Western Oregon Communities

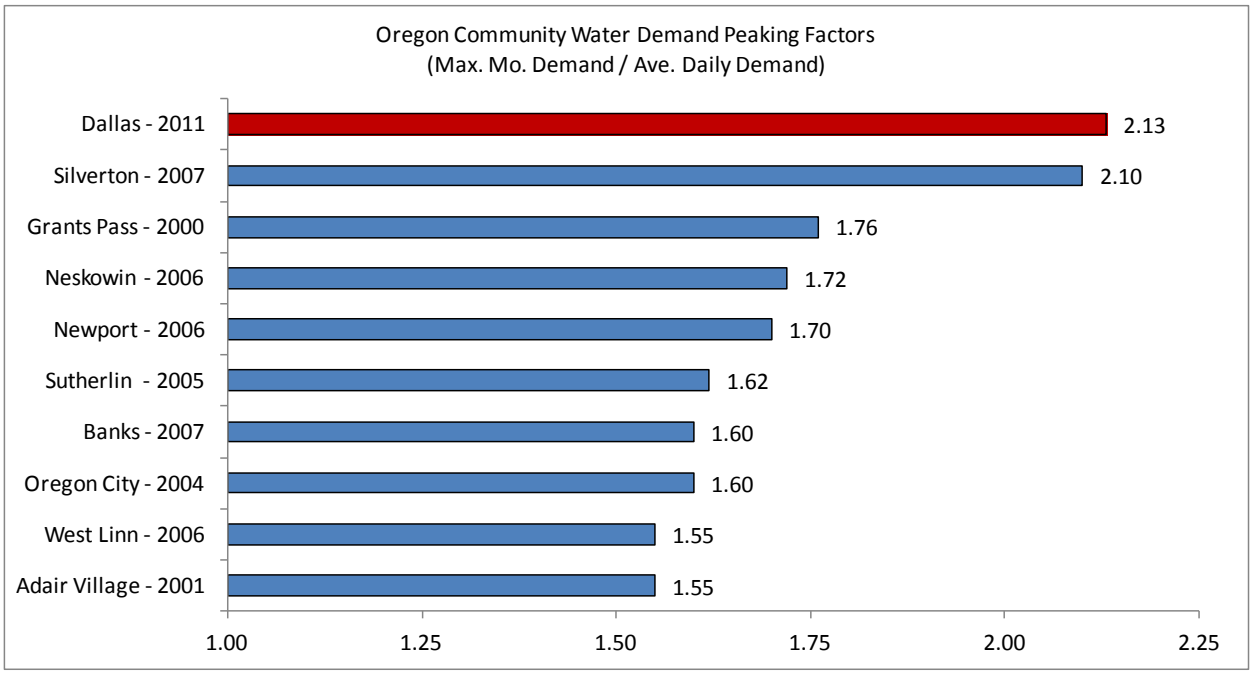


Figure 2 shows, Silverton and Dallas have relatively high peak demand factors relative to other western Oregon communities. Interestingly, both Silverton and Dallas have declining block water rate structures in the summer.

Closer inspection of the historical consumption patterns of the residential customer class corroborated the assumption that residential customers are the principal cause of seasonal water peaking demand. Based on this data, the average residential customer consumed 13.15 ccf per month on an annualized basis. During the summer months of June to September, this monthly average consumption increased to 18.82 ccf per month.

As discussed previously, the City's current summer water rate structure consists of declining block prices. Under this rate structure, customers are offered water at lower prices as they use water more during the peak summer irrigation season. City staff and the URAC directed the consultant team to investigate the feasibility of implementing a new pricing structure for the commodity charge that would give customers an economic incentive to conserve rather than use more water during the peak summer demand period. The preferred approach was to create an inverted block pricing structure for the commodity charge. Generally, an inverted block rate structure is the most widely accepted and effective water conservation rate structure in use throughout the country. Rates increase as consumption increases. The first step in the development of an inverted block rate structure is to design the pricing blocks based on a "revenue neutral" financial forecast. To achieve this goal, a model was developed to replicate the water sales conditions that were in place for calendar 2011 for all customers.

The consultant team created four rate blocks for the residential class based on the observed standard deviation of residential water consumption during the summer of 2011. The statistical derivation of the rate blocks is shown below in Table 8.

Table 8 - Derivation of Water Conservation Rate Tiers based on Summer, 2011 Consumption Data

Consumption Blocks Based on Observed Sample Standard Deviation			
Mean	18.82		
Standard Deviation*	19.10		
Median	14.00		
	Usage Blocks (ccf)		% by Block
	Block	Number of Bills	
	Zero to 3	919	10%
	4 to 19	5,095	55%
	20to 38	2,309	25%
	39 to 57	596	6%
	Over 58	322	4%
Total		9,241	100%
Checksum		9,241	
Checksum error		0	

❖ In statistics and probability theory, standard deviation shows how much variation or "dispersion" exists from the average (mean, or expected value). A low standard deviation indicates that the data points tend to be very close to the mean, whereas high standard deviation indicates that the data points are spread out over a large range of values.

As Table 8 shows, roughly 65% of all residential customers consumed 19 ccf or less per month during the summer of 2011. Conversely, 35% of the remaining residential customers consumed 20 ccf or more per

month over the same period. To encourage water conservation to those customers consuming over 20 ccf per month, pricing premiums were applied as follows:

20 ccf to 38 ccf (25% of customers in the Summer of 2011) ..... 10% more than the base block

39 ccf to 57 ccf (6% of customers in the Summer of 2011) ..... 20% more than the base block

Over 58 ccf (4% of customers in the Summer of 2011) ..... 30% more than the base block

The final step in the development of the alternative conservation water rate structure was to revisit the strategy for calculating the monthly customer base charge. Under the City's current rate structure, all customers regardless of the size of the water meter that is in place to serve the customer are charged a uniform $15.75 per month base fee. Keeping in mind, 94% of all Dallas water customers are served by either a ⅝" x ¾" or ¾" x ¾" water meter, an alternative to this approach would be to increase the monthly base fee based on the throughput capacity of the meter in place to serve customers. Using the ¾" meter as the standard, and knowing the engineered capacities of all meters in service (expressed in gallon per minute flow rates), a flow factor equivalence could be assigned to larger meters, and bill according. By increasing the monthly base fee to larger meters, it could give an incentive to existing customers to migrate down to smaller meters. The flow factor equivalence calculations for varying meter sizes is shown below in Table 9.

Table 9 - Calculation of Flow Factors for Water Meters

Meter Size:	AWWA Flow Rate Cont. Op. GPM	Flow Factor
5/8" x 3/4"	10	1.00
3/4" x 3/4"	15	1.00
1 inch	25	1.67
1 & 1/2 inch	50	3.33
2 inch	80	5.33
3 inch	175	11.67
4 inch	300	20.00
6 inch	625	41.67
8 inch	900	60.00

The rate effect of increasing monthly customer base fees by meter size and the implementation of increasing block commodity charges are shown in Table 10.

Table 10 - Schedule of Conservation-Based Water Rates

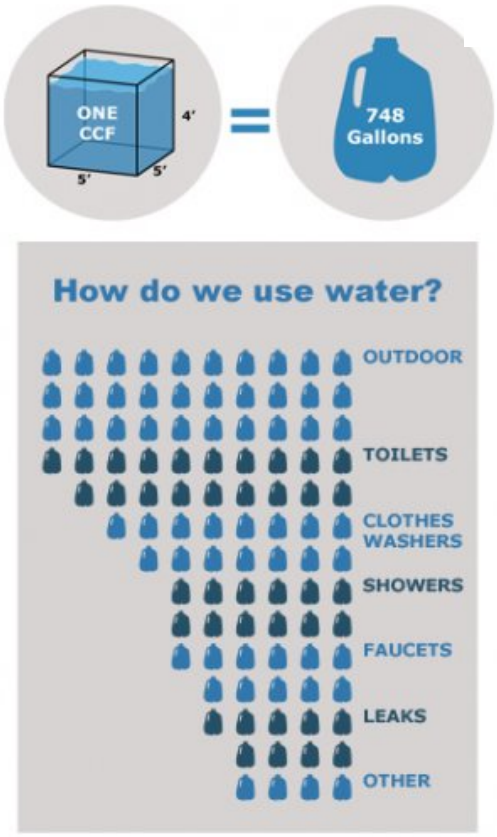
	2013	2014	2015	2016	2017	2018
Inside City:						
Base charge (monthly)						
Meter Size:						
5/8" x 3/4"	$ 15.75	$ 16.14	$ 16.54	$ 16.92	$ 17.30	$ 17.62
3/4" x 3/4"	15.75	16.14	16.54	16.92	17.30	17.62
1 inch	26.25	26.90	27.57	28.20	28.83	29.37
1 & 1/2 inch	52.50	53.80	55.13	56.40	57.67	58.73
2 inch	84.00	86.08	88.21	90.24	92.27	93.97
3 inch	183.75	188.30	192.97	197.40	201.83	205.57
4 inch	315.00	322.80	330.80	338.40	346.00	352.40
Use Charge ($/Ccf)						
Residential and Multifamily						
Zero to 300 cubic feet	-	-	-	-	-	-
400 cubic feet to1,900 cubic feet	1.67	1.73	1.78	1.84	1.90	1.96
2,000 cubic feet to 3,800 cubic feet	1.84	1.90	1.96	2.02	2.09	2.16
3,900 cubic feet to 5,700 cubic feet	2.01	2.07	2.14	2.21	2.28	2.36
Over 5,700 cubic feet	2.17	2.24	2.32	2.39	2.47	2.55
Commercial/Industrial						
Zero to 300 cubic feet	-	-	-	-	-	-
400 cubic feet to 50,000 cubic feet	1.30	1.34	1.38	1.43	1.48	1.52
Over 50,000 cubic feet	1.43	1.47	1.52	1.57	1.62	1.68
Outside City:						
Base charge (monthly)						
Meter Size:						
5/8" x 3/4"	31.50	32.28	33.08	33.84	34.60	35.24
3/4" x 3/4"	31.50	32.28	33.08	33.84	34.60	35.24
1 inch	52.50	53.80	55.13	56.40	57.67	58.73
1 & 1/2 inch	105.00	107.60	110.27	112.80	115.33	117.47
2 inch	168.00	172.16	176.43	180.48	184.53	187.95
3 inch	367.50	376.60	385.93	394.80	403.67	411.13
4 inch	630.00	645.60	661.60	676.80	692.00	704.80
Use Charge ($/Ccf)						
Residential and Multifamily						
Zero to 300 cubic feet	-	-	-	-	-	-
400 cubic feet to 2,300 cubic feet	2.51	2.59	2.67	2.76	2.85	2.95
2,400 cubic feet to 4,300 cubic feet	2.76	2.85	2.94	3.04	3.14	3.24
4,400 cubic feet to 6,300 cubic feet	3.01	3.11	3.21	3.31	3.42	3.54
Over 6,400 cubic fee	3.26	3.37	3.47	3.59	3.71	3.83
Commercial/Industrial						
Zero to 300 cubic feet	-	-	-	-	-	-
400 cubic feet to 50,000 cubic feet	1.95	2.01	2.07	2.14	2.21	2.29
Over 50,000 cubic feet	2.14	2.21	2.28	2.36	2.43	2.52

Understanding Your Water Bill

The first step in changing the way you use water in the future is by understanding how much water you use today. The best place to find this information is on your monthly water bill. Pull out your water bill and follow the steps below to learn more about it and your own water use.

On This Page:

How much do you use?



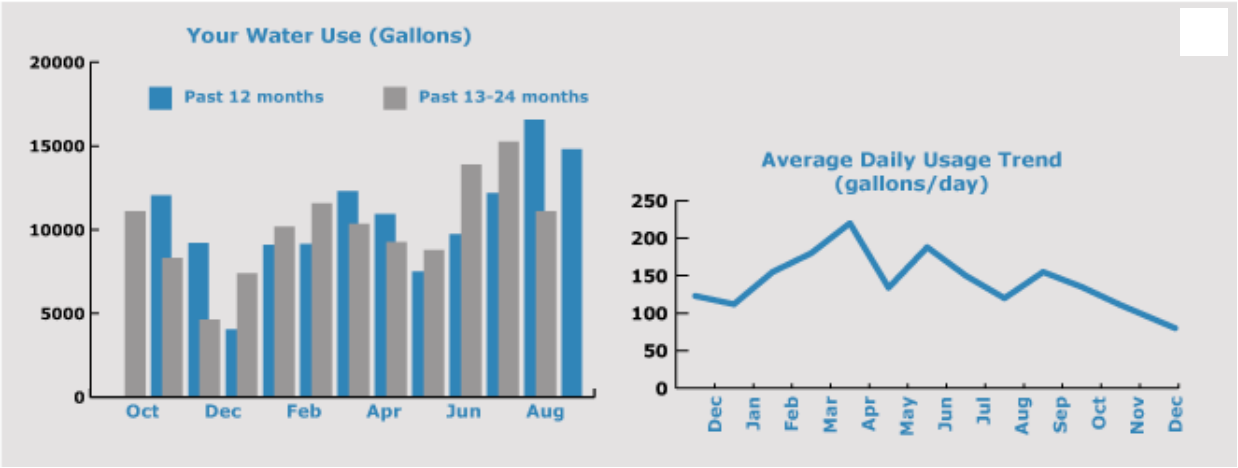
Different utilities use different units for measuring water use. The most common units are centum cubic feet (CCF) and the gallon. A CCF also called an HCF (hundred cubic feet), represents one hundred cubic feet of water. The first "C" comes from the Roman word for hundred, "centum." This is the most common unit used by both water and natural gas utilities. But you may be more familiar with the other unit, the gallon. One CCF is equal to 748 gallons.

What does your usage mean? The average American uses around 82 gallons per day per person in the household. That means a family of four would use around 10,000 gallons in a 30-day period. But usage varies a great deal across the country, mostly because of differences in weather patterns. For example, water use tends to be higher in drier areas of the country that rely more on irrigation for outdoor watering than in wetter parts of the country that can rely on more rainfall.

Based on information from *Water Research Foundation*, “Residential End Uses of Water, Version 2.” 2016; and *The US Geological Survey*, “Estimated Water Use in the United States.” 2015 <https://www.usgs.gov/mission-areas/water-resources/science/water-use-united-states>.

What is your usage trend?

Does your bill explain your household's usage trend? Some utilities provide graphs like the ones below that show how your water use has varied over the course of the year and previous years. This can be a helpful way of seeing when your own water use reaches its highest levels.



While using water efficiently is important throughout the year, sometimes the timing of water use can make a big difference for community water supplies—and your water bill.

Do you notice that your water use (and bill) are higher in the summer? Water utilities operate with this higher, summertime use in mind because they must be able to provide for all the water a community needs over an extended period. Some systems may be forced to restrict outdoor watering during the peak to ensure that water is available for more important community needs. WaterSense has tips to help you reduce your water use when it's hot <https://epa.gov/water-sense/when-its-hot> outside.

If your water use increases and you haven't been watering outdoors more than normal or at all, it could be the sign of a leak. Water wasted from leaks can add up over time and cost you money. WaterSense has tips to help you find and fix those leaks <https://epa.gov/watersense/fix-leak-week>.

How does your use compare to that of your neighbor?

Some utilities provide information on how your household compares to that of your neighbors. This can help you see how your usages stacks up versus other users in your same climate area and can be a helpful way of gauging your "WaterSense." Some utilities use bills that compare your use to a random group of your neighbors while some utilities use a "tiered system" to differentiate users such as in the example below.

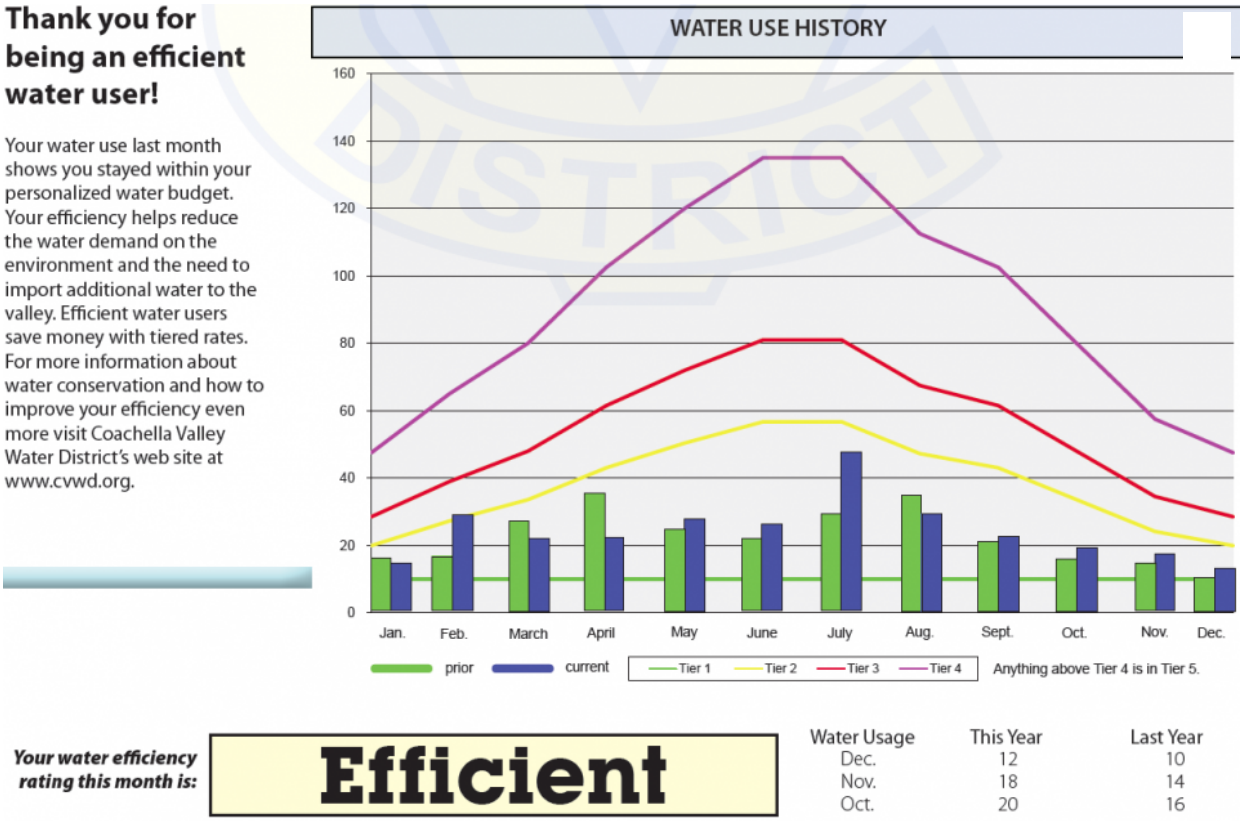


Image courtesy of Coachella Valley Water District <http://www.cvwd.org/198/rates>.

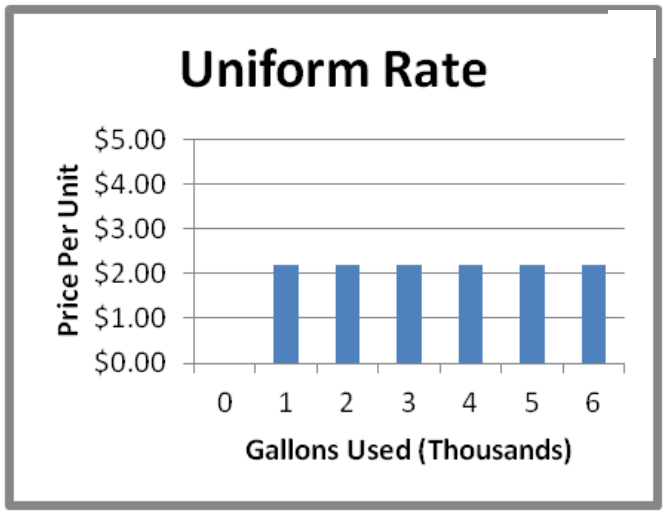
How are you being charged?

Water utilities need to charge customers to build and maintain infrastructure—the water storage tanks, treatment plants, and underground pipes that deliver water to homes and businesses. The revenue is also used to pay the workers who provide you with water service day or night. There are a wide variety of rate structures that are used to bill customers, some of which are described below.

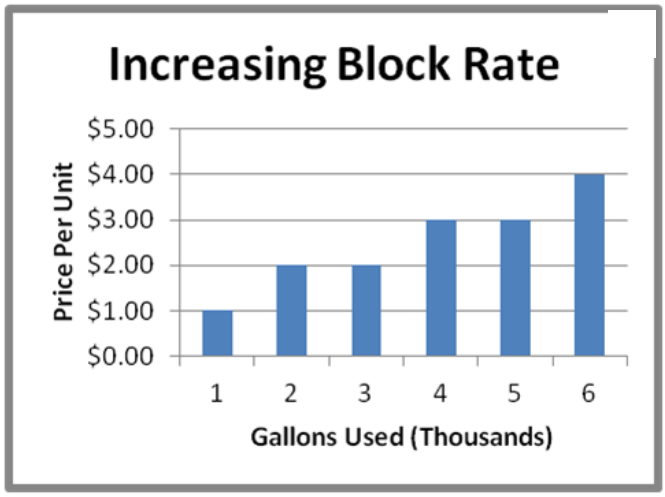
Rate Types

Flat Fee is a rate structure where all customers are charged the same fee, regardless of the amount of water used. Flat fees are the simplest type of rate structure and are rarely used today. They generally don't provide revenue sufficient to operate the utility and are not good at promoting water efficiency.

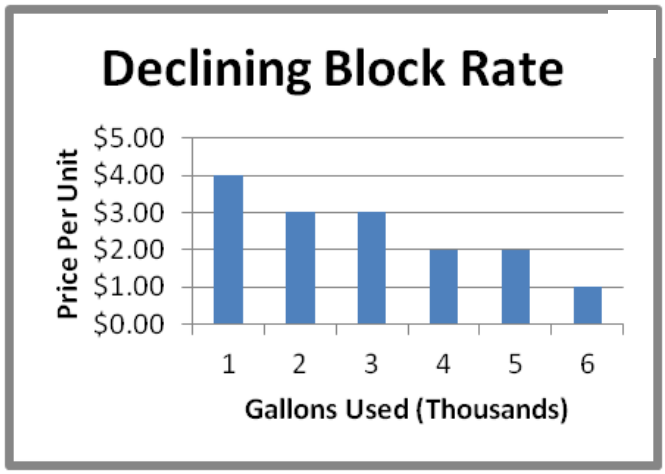
Uniform Rate is a structure that has a constant per unit price for all metered units of water consumed on a year-round basis. It differs from a flat fee in that it requires metered service. Some utilities charge varying user groups different rates such as



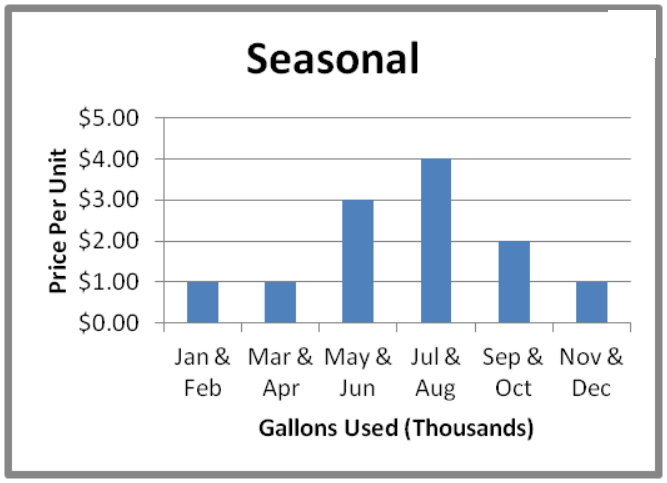
charging residential households one rate and industrial users a different rate. Constant block rates provide some stability for utilities and encourage conservation because the consumer bill varies with water usage.



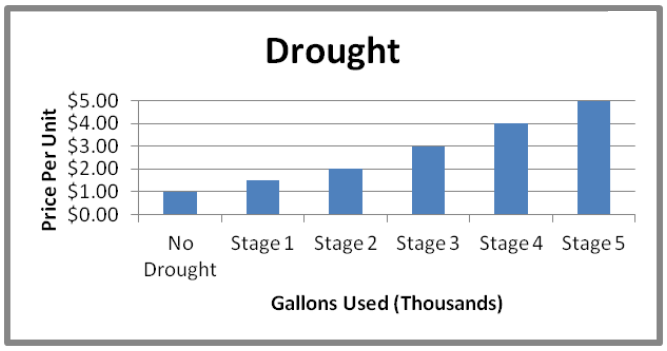
Increasing Block Rates is a rate structure in which the unit price of each succeeding block of usage is charged at a higher unit rate than the previous block(s). Increasing block rates are designed to promote conservation and are most often found in urban areas and areas with limited water supplies. The graphic to the right is an example of an increasing block rate structure.



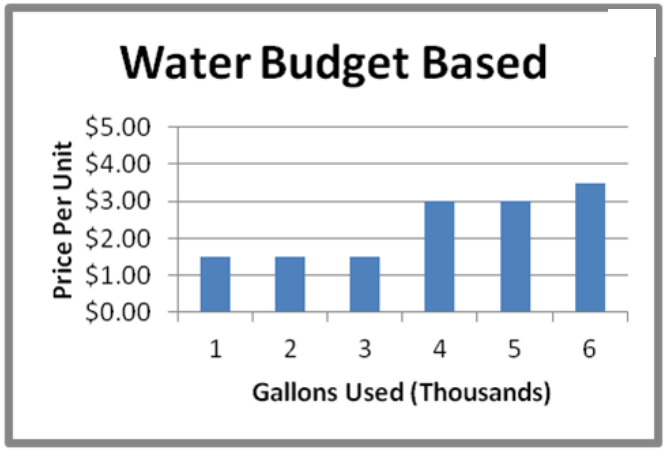
Declining Block Rates are the opposite of increasing block rates where the unit price of each succeeding block of usage is charged at a lower unit rate than the previous block(s). This rate structures are popular in rural areas that service large farming populations or areas with large users such as heavy industry and where water is plentiful.



Seasonal Rates are rates that cover a specific time period. They are established to encourage conservation during peak use periods. Examples of seasonal rates may have lower rates for the winter season and higher rates for the summer season due to increased water demand associated with lawn watering and outside activities.



Drought Rates are similar to seasonal rates but instead of applying higher rates during an entire time period, they adjust rates based on the local area's drought level. Higher levels of drought result in higher prices for water in order to encourage conservation.



Water Budget Based Rates is a rate structure where households are given a "water budget" based on the anticipated needs of that household either by the number of people living in the house and/or property size. Users are charged a certain rate for use within their budget and a higher rate for use that exceeds their budget. The goal is to encourage efficient water use of every individual customer.

What are my charges going towards?

Many utilities use a combination of a fixed fee (base) and a variable fee (volume) for their water rate structure. Fixed charges generally include the price the customer pays as a base charge to help cover costs for maintaining existing infrastructure and repaying loans and bonds used to build that infrastructure. Variable charges are the price the customer pays per volume of water used, which reflect the costs of providing water, such as costs for chemical treatment to provide safe water and energy to move and deliver water.

Most utilities will provide you with a breakdown of charges in your "billing detail" or "summary of charges" section. Note that some utilities measure both water entering the house and waste leaving to the sewer, but many utilities have only one meter on location and will charge both volumes based on water entering the house. This is yet another reason to reduce your own water use. If you're curious about what various surcharges and other charges on your utility bill mean, you can usually find that information either on the back or appendix of the bill or on your local water utility's website. Two examples are provided below.

Uniform Rate Example - in the first example, roughly half of the $147.62 being charged is directly related to water use. Most utilities charge a set flat fee (the "Water Base Facility Charge" in the example) that helps to pay for the base costs of providing water including the electricity needed to transport and clean the water, the personnel and others costs of daily maintenance of the delivery system, and other fixed operating costs.

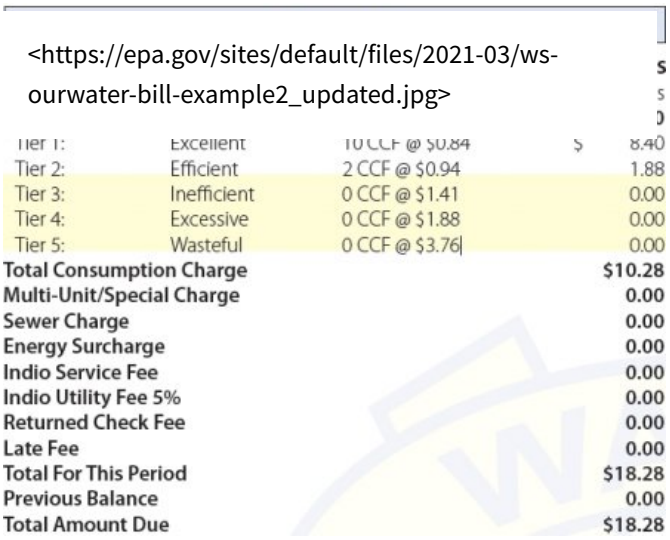
Billing Detail

Amount Owed from Last Bill	$135.80
Total Payments Received	135.80
Remaining Balance	**0.00**
Water Base Facility Charge	20.84
12.500 gallons @ $0.00295 per gallon	36.88
Current Water Charges	57.72
Sewer Base Facility Charge	63.80
Rate Case Expense Surcharge Water	2.50
Rate Case Expense Surcharge Sewer	2.50
Regulatory Assessment Fee	1.22
Deferred Capital Expense Surcharge Water	9.94
Deferred Capital Expense Surcharge Sewer	9.94
Amount Due ON or BEFORE 07/07/10	**$147.62**
Amount Due AFTER the Current Due Date	**$159.77**

This utility uses a uniform rate structure that charges the user $0.00295 per gallon (or roughly 3 cents for every 10 gallons) used during the billing period. The bill also shows a similar facility charge for sewer and a "rate case expense surcharge" to help pay for the

utility's rate setting process. The "regulatory assessment fee" helps the utility pay for costs associated with maintaining regulatory compliance with clean water statutes. Finally, some utilities charge fees similar to the "Deferred Capital Expense Surcharge" which puts money into a fund to help pay for long term investments in improvements to infrastructure such as new pipes, treatment facilities or reservoirs.

Increasing Block Rate Example - this second bill is an example of an efficient user with an increasing block rate structure. You can see that the utility has even labeled the various blocks with its corresponding water use efficiency level. The above user falls into the "Efficient" group and so avoids the much higher per unit costs of the next three tiers. Some utilities will forgive various surcharges for its most efficient users because their below average water use places less burden on the system and reduces demand for new sources of water and pipes to transport this water.



More Information

Utilities will often use the back of the bill as a "message area." This area will sometimes have information on rebate programs, water efficient products, or other tips on water conservation.

If you're looking for more information on how your bill functions, you can visit the following sites:

- For interactive examples of bills visit Understanding your Water Bill pages from the East Bay Municipal Bay Utility District (CA) <http://www.ebmud.com/customers/billing-questions/understanding-your-bill/> and Cleveland (OH) Water <http://www.clevelandwater.com/customer-service/understanding-your-bill>.
- To learn more about what services are being paid for from water bills, visit the Financing Sustainable Water page for concerned citizens <http://www.financingsustainablewater.org/home/concerned-citizens>.

Contact Us <https://epa.gov/watersense/forms/contact-us-about-watersense> to ask a question, provide feedback, or report a problem.

LAST UPDATED ON JULY 20, 2023

EXHIBIT 1: Area Cities Rate Comparison

RESIDENTIAL

	Water Base	Add'l 100cf	Sewer	Add'l Fees	Stormwater	Add'l Fees
DALLAS	$ 26.44	$ 2.84	$ 45.21		$ 12.00	$ 4.95
NSFR			$ 30.57	$ 1.07	$ 12.00	

	Water Base	Add'l/100cf	Sewer	Over 791cf	Stormwater
MONMOUTH	$ 22.48	$ 3.23	$ 38.57	$ 0.04776	$ 13.73

	Water Base	Add'l/100cf	Sewer	Stormwater	Storm ERU
INDEPENDENCE	$ 34.79	$ 3.33	$ 56.02	$ 1.60	$ 11.76

	Water Base	Add'l 100cf	Per Dwelling	Sewer	Per 100cf	Stormwater	Add'l Fees
SILVERTON				$ 29.91	$ 8.25	$ 8.76	$ 13.16
1" and under	$ 21.88	$ 3.71	$ 5.68				
1 1/2"	$ 72.92	$ 3.71	$ 5.68				
2"	$ 116.67	$ 3.71	$ 5.68				
3"	$ 233.33	$ 3.71	$ 5.68				
4"	$ 364.56	$ 3.71	$ 5.68				

	Water Base	1000gal	Sewer	Stormwater	Add'l Fees
STAYTON	$ 33.64	$ 1.65	$ 71.02		
SFD				$ 9.03	$ 4.00
Mobile Park(per unit)				$ 9.03	$ 2.08
Apt (per unit)				$ 5.41	$ 2.24
Assist Living (per unit)				$ 5.41	$ 1.00

EXHIBIT C.1

RESIDENTIAL

	Water Base	Add'l 100cf	Add'l 100cf	Sewer	Add'l 100cf	Stormwater	Storm ERU	Add'l Fees
ALBANY (SFR)		First 6	Over 6	$ 43.63	$ 3.08			$ 9.00
3/4" or less	$ 22.66	$ 5.05	$ 3.20					
1"	$ 33.12	$ 5.05	$ 3.20					
1 1/2"	$ 75.47	$ 5.05	$ 3.20					
2"	$ 120.81	$ 5.05	$ 3.20					
1350 sqft or less						$ 11.58	$ 3.51	
1351 to 3150 sqft						$ 11.58	$ 4.73	
3151 sqft or more						$ 11.58	$ 5.92	

	Water Base	$/100cf	$/100cf	$/100cf	Sewer(per dwelling)	$/100cf	Stormwater	$/ERU	Add'l Fees
ALBANY (NSFR)		$4.07	$3.05	$ 2.84	$ 43.63	$ 3.08	$ 11.58	$ 4.73	$ 7.20
3/4" or less	$ 22.66	First 17	Next 17	Over 34					
1"	$ 33.12	First 18	Next 18	Over 36					
1 1/2"	$ 45.47	First 21	Next 21	Over 42					
2"	$ 120.81	First 25	Next 25	Over 50					
3"	$ 241.85	First 28	Next 28	Over 56					
4"	$ 377.84	First 30	Next 30	Over 60					
6"	$ 755.47	First 31	Next 31	Over 62					
8"	$ 838.67	First 40	Next 40	Over 80					
10"	$ 838.67	First 92	Next 92	Over 184					
12"	$ 838.67	First 92	Next 92	Over 184					

EXHIBIT C.2

RESIDENTIAL

	Water Base	Pressure Level 1	Pressure Level 2	Pressure Level 3	Pressure Level 4	Sewer	$/100cf	Stormwater
LEBANON SFR								$ 4.82
3/4" (low income)	$ 21.26	$ 4.96	$ 5.70	$ 6.60	$ 7.55			
3/4"	$ 23.61	$ 5.48	$ 6.32	$ 7.27	$ 8.34			
1"	$ 31.86	$ 5.48	$ 6.32	$ 7.27	$ 8.34			
1 1/2"	$ 71.22	$ 5.48	$ 6.32	$ 7.27	$ 8.34			
2"	$ 127.09	$ 5.48	$ 6.32	$ 7.27	$ 8.34			
Domestic Low Income						$ 24.58	$ 7.02	
Domestic						$ 27.30	$ 7.79	
Not Served City Water						$ 97.48		
LEBANON NSFR Developed								
1/4 acre & under								$ 17.45
1/4 - 1/2 acre								$ 43.66
1/2 acre and over								$ 96.03
LEBANON NSFR Undeveloped								
1/4 acre & under								$ 5.25
1/4 - 1/2 acre								$ 6.98
1/2 acre and over								$ 8.72

EXHIBIT C.3

Commercial

	Water	Add'l Units	Sewer	Per HCF	Stormwater	Add'l Fees
DALLAS	$ 26.44	$ 2.21			$ 12.00	$ 4.95
Commercial I			$ 40.78	$ 1.07		
Commercial II			$ 40.78	$ 2.30		
Commercial III			$ 40.78	$ 2.46		

	Water	Per 100 cf	Sewer	Per cf	Stormwater	Per ERU
MONMOUTH		$ 3.23	$ 38.57	$ 0.04872	$ 13.73	
5/8" to 3/4"	$ 22.48					
1"	$ 31.46					
1 1/2"	$ 40.43					
2"	$ 65.09					
3"	$ 247.00					
4"	$ 309.74					
6"	$ 471.58					

	Water	$/100cf	Sewer	Stormwater	Per 1000 sqft	
INDEPENDENCE		$ 3.33		$ 472.00		
5/8" to **3/4"**	$ 34.79		**$ 3,353.00**			
1"	$ 73.06		$ 5,972.00			
1 1/4"	$ 107.89					
1 1/2"	$ 153.12		$ 13,411.00			
2"	$ 264.47		$ 23,840.00			
3"	$ 584.62		$ 59,599.00			
4"	$ 1,026.55		$ 95,358.00			
6"	$ 2,300.16					

EXHIBIT C.4

Commercial

	Water	Per 1000 gallons	Sewer per gallons		Stormwater per sqft	
STAYTON			**Up to 4,000**	$ 53.07	**up 2,500**	$ 9.03
3/4"	$ 33.64	$ 1.65	**4,001 to 6,000**	$ 71.02	**2501 to 5000**	$ 13.54
1"	$ 70.53	$ 1.65	**6,001 to 10,000**	$ 132.57	**5001 to 10000**	$ 27.09
1 1/2"	$ 94.70	$ 1.65	**Above 10,000**	$13.26/1,000	**10001 to 1500**	$ 45.16
1"	$ 123.87	$ 1.65			**15001 to 2000**	$ 63.21
3"	$ 353.49	$ 1.65			**20001 to 3000**	$ 90.30
6"	$ 693.69	$ 1.65			**30001 to 4000**	$ 126.45
10"	$ 2,018.50	$ 1.65			**40001+**	$ 162.54

	Water	Block 1	Block 2	Block 3	Sewer	$/100cf	Stormwater	$/ERU
ALBANY		$ 4.24	$ 3.09	$ 2.93				
Low					$ 5.45	$ 8.66	$ 11.58	$ 4.73
Medium					$ 21.06	$ 11.02	$ 11.58	$ 4.73
High					$ 24.33	$ 18.02	$ 11.58	$ 4.73
3/4" or less	$ 22.66	First 17	Next 17	Over 34				
1"	$ 33.12	First 18	Next 18	Over 36				
1 1/2"	$ 45.47	First 21	Next 21	Over 42				
2"	$ 120.81	First 25	Next 25	Over 50				
3"	$ 241.85	First 28	Next 28	Over 56				
4"	$ 377.84	First 30	Next 30	Over 60				
6"	$ 755.47	First 31	Next 31	Over 62				
8"	$ 838.67	First 40	Next 40	Over 80				
10"	$ 838.67	First 92	Next 92	Over 184				
12"	$ 838.67	First 92	Next 92	Over 184				

EXHIBIT C.5

Commercial

	Water					Sewer	$/100cf	Stormwater
LEBANON		**Pressure 1**	**Pressure 2**	**Pressure 3**	**Pressure 4**			
3/4"	23.61	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 40.21	$ 7.79	
1"	31.86	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 61.50	$ 7.79	
1 1/2"	71.22	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 155.74	$ 7.79	
2"	127.09	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 275.19	$ 7.79	
3"	232.93	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 620.63	$ 7.79	
4"	402.52	$ 5.48	$ 6.32	$ 7.27	$ 8.34	$ 1,501.55	$ 7.79	
6"	716.43	$ 5.48	$ 6.32	$ 7.27	$ 8.34			
LEBANON Comm DTL								
1/4 acre & under								$ 17.45
1/4 - 1/2 acre								$ 43.66
1/2 acre and over								$ 96.03
LEBANON Comm UTL								**Stormwater**
1/4 acre & under								$ 5.25
1/4 - 1/2 acre								$ 6.98
1/2 acre and over								$ 8.72

EXHIBIT C.6

Commercial

	Water	Dwelling	$/100cf	Meter Equivalent Factor	Sewer	Per 100cf	Stormwater	Add'l Fees
SILVERTON							$ 8.76	$ 13.16
5/8" & 3/4"	$ 21.88	$ 5.68	$ 3.71	1	$ 29.91			
1"	$ 36.46	$ 5.68	$ 3.71	2.5	$ 74.78			
1 1/2"	$ 72.92	$ 5.68	$ 3.71	5	$ 149.55			
2"	$ 116.67	$ 5.68	$ 3.71	8	$ 239.28			
3"	$ 233.33	$ 5.68	$ 3.71	15	$ 448.65			
4"	$ 364.56	$ 5.68	$ 3.71	25	$ 747.75			
6"				50	1495.5			
Commercial I						$ 8.25		
Commercial II						$ 9.88		
Commercial III						$ 11.71		
Commercial IV (**SEWER ONLY**)	$6.18/Ccf of Flow | $0.80/lb of BOD | $0.80/lb of TSS | 5% allotted for total load overage charge | BOD $1.00/lb | TSS - $1.00/lb							

EXHIBIT C.7