

# Cost-to-serve Rates: Part II

Hopefully, the cost-to-serve rates article in the March 2018 issue of *The Kansas Lifeline* convinced you that you DO want cost-to-serve rates. They are adequate and fair.

You arrive at cost-to-serve rates in two phases:

1. “Classification,” which results in a set of total costs: fixed, variable and capacity-related. That was covered in the last issue. And,
2. “Allocation,” which is the process of divvying costs out to customers. That is covered in this article.

Consider this allocation example for the Town of Ratewell.

First, gather data, part of which comes from classification. Ratewell’s basic data is shown in Table 1. Ratewell is a small town with relatively low costs. It has a customer base that is fairly uniform – mostly residential with 3/4-inch meters and just a few commercial customers with larger meters. Simple rates are appropriate here.



Table 1: Town of Ratewell Data	
Number of Connections . . . . .	1,000
Billable Usage, in Gallons . . . . .	60,000,000
<b>(Billable Unit is 1,000 Gallons)</b>	
Usage Allowance . . . . .	None
Billing Frequency . . . . .	Monthly
Total Fixed Costs . . . . .	\$240,000
Total Variable Costs . . . . .	\$300,000
<b>Total Peak Flow Capacity Cost</b>	<b>\$1,000,000</b>
(Annual Capacity Cost When Distributed Over 30 Years)	\$33,333

Table 2: Fixed Cost Allocation	
Total Fixed Costs . . . . .	\$240,000
<i>divided by</i>	
Number of Connections . . . . .	1,000
<i>divided by</i>	
Billing Frequency . . . . .	12
<i>equals</i>	
Monthly Base Minimum Charge . . .	\$20.00

Appropriately, Ratewell wants simple rates. In “analyst-speak”, they want to “allocate” costs simply, using the same minimum charge for all customers, the same unit charge for all volumes of use and no usage allowance.

Table 2 shows how to calculate Ratewell’s minimum charge. Every customer would pay this \$20.00 base fee every month. That is a bit short of fair, but to keep the math simple, something has to give.

Table 3 shows how to calculate Ratewell’s level unit charge in dollars per 1,000 gallons. The rate of \$5.00 per 1,000 gallons is the average variable cost of the water. Another structure may be more appropriate, but Ratewell is going for simple math. That also rules out a usage allowance.

Table 3: Variable Cost Allocation	
Total Variable Costs . . . . .	\$300,000
<i>divided by</i>	
Billable Usage, in Gallons . . . .	60,000,000
<i>times</i>	
Gallons per Billable Unit . . . . .	1,000
<i>equals</i>	
Unit Charge per 1,000 Gallons .	\$5.00

Speaking of usage allowances:

■ Divide the 60,000,000 billable gallons from Table 3, by the 1,000 connections in Table 2, and then divide again by 12 (months) and you get an average use per month of 5,000 gallons. That amount of monthly use is considered as being near the national household average usage.

■ If Ratewell had a usage allowance of 10,000 gallons per month, very few of the 60,000,000 gallons would be billable. To balance the budget that means, charge the few billable gallons at a very high unit charge, which just would not fly. Or, recover some of the variable costs with the minimum charge. That is not fair, but it's commonly done. On the upside, an inflated minimum charge is almost a guaranteed revenue stream, making utility budgeting more dependable. But, then, no usage allowance and an appropriate reserve level does that just as well and it does it fairly.

None of the previous calculations include capacity cost recovery. There are reasons utilities go down that path:

- It simplifies the rates math drastically, for a while, and
- If the utility is burdened enough, it just might qualify for big grants and federal or state-subsidized loans – (commonly considered, “using other people's money”).

Using other people's money is a good gig, if you can get it. But, as Margaret Thatcher once said, “The problem with socialism is that you eventually run out of other people's money.” Yes, yes, I know, the state and the feds mandated you to build a lot of this “stuff” and if they don't pay for it, it's an unfunded mandate. Well, sometimes unfunded mandates happen!

My advice: choose a course, then set rates appropriately. Use other people's

money if the rules say you can and doing so will not put the utility at financial risk. And, don't cry too hard when the money goes away.

Back to the issue of system development cost recovery. Ratewell could allocate these costs in different ways. Some are risky, many are unfair and only a few are fair and low-risk. What method is low risk and fair? Assess system development fees and capacity surcharges to the minimum charge, both based on American Water Works Association studies of the sustainable peak flow capacity of different meter sizes. Such rates are beyond Ratewell to calculate. But, you might want them, so consider this.

If Ratewell recovered all capacity costs with surcharges only, as shown in a simplified way in Table 4, the minimum charge for a 3/4-inch meter would increase by \$2.60. That's not much of a hike to ensure sustainability – and it would do it fairly. If Ratewell recovered any of these costs with system development fees, the surcharge could be lower.

That would be fairer, but it is a complicated calculation. Meter size-based system development fee calculations are based on the same principles, so those fees would graduate with meter size, too.

Like Ratewell, you have rate calculation and outcome options:

1. You can seek adequate and fairly structured rates, in which case
  - a. Probably, a hired specialist would do the hard math, initially, and

**But, as Margaret Thatcher once said, “The problem with socialism is that you eventually run out of other people's money.”**



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**Table 4: Peak Flow Minimum Charge Surcharges, by meter size in Town of Ratewell**

Meter Size	AWWA Flow Capacity "Shares"	Number Meters This Size	Sum of Capacity Shares	Annual Capacity Cost per "Share"	Monthly Capacity Surcharge per Meter	Total Monthly Surcharged Minimum Charge	Surcharges Collected From Each Meter Size Class
Five-eighths	1	0	0	\$20.83	\$1.74	\$21.74	\$0
Three-quarters	1.5	980	1,470	\$20.83	\$2.60	\$22.60	\$30,625
One-inch	2.5	10	25	\$20.83	\$4.34	\$24.34	\$521
One and a half-inch	5	5	25	\$20.83	\$8.68	\$28.68	\$521
Two-inch	16	5	80	\$20.83	\$27.78	\$47.78	\$1,667
<b>Total</b>		<b>1,000</b>	<b>1,600</b>				<b>\$33,333</b>

Total annual peak flow cost is \$33,333. This cost is spread among the meter size classes above.  
 Note: "Capacity Shares" above were calculated from AWWA flow study results.

b. Your system would follow-up in later years with simple inflationary increases to keep rates adequate and pretty fair. That's a nice blend of complex and simple math and very fair rates initially and pretty fair rates for years to come. Or,

2. Your system can do simple calculations on your own every year, arriving at rates that are adequate, but with rate structure fairness as an unknown. The more uniform your customers are, the fairer will be such rates.

To find the best option for your utility, contact Greg Duryea at the Kansas Rural Water Association. He will advise you well. If you go with Option 2, Greg can even help you with the math.

If you choose Option 1, know that the Association initiated the Kansas RATES Program to do the difficult

math. Disclosure: I am the analyst for the Program, so I would do that math. To learn more, visit <http://krwa.net/TECHNICAL-ASSISTANCE/Rate-Reviews>.

Do rate setting right and (most of) your ratepayers will be (relatively) happy and your utility will be well-funded. That is as close to rate setting nirvana as you can get.

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The Kansas Rural Water Association provides training for more than 6,000 operators, managers and industry professionals annually at approximately 100 days of training. KRWA sponsors training on a regional basis to help local water and wastewater systems save costs of travel to a centralized location. Tentative, upcoming training sessions are listed below. Always check [www.krwa.net](http://www.krwa.net) for the confirmed schedules and online registration.

**KRWA encourages you to visit [www.krwa.net](http://www.krwa.net) for training opportunities in your area!**

Date	Location	Session Topic	Credit
July 11, 2018	Arkansas City	Complying with Drinking Water Regulations, Distribution Maintenance	w
July 11-12, 2018	Concordia	Understanding and Troubleshooting Electrical Motors and VFDs	w/ww
July 17, 2018	Salina	Operation and Maintenance of Wells and Distribution Systems	w
July 18, 2018	Dodge City	Competent Person For Trenching and Excavation	w/ww
July 19, 2018	Dodge City	Confined Space Entry	w/ww
July 25-26, 2018	Dodge City	Understanding and Troubleshooting Electrical Motors and VFDs	w/ww
August 1-2, 2018	Hays	Basic Electrical Maintenance and Troubleshooting	w/ww
August 8, 2018	Manhattan	Pipe Fusion and Fittings	w
August 16, 2018	Tonganoxie	Installation of Tracer Wire Proper Line Locating	w/ww
August 21, 2018	Mayetta	Water System Operations, Metering Technologies, Water Loss Reduction	w
August 22, 2018	Great Bend	Water System Operations, Metering Technologies, Water Loss Reduction	w
August 29, 2018	Phillipsburg	Competent Person For Trenching and Excavation	w/ww
August 30, 2018	Phillipsburg	Confined Space Entry	w/ww
September 12, 2018	Garden City	Operation and Maintenance of Wells and Distribution Systems	w
September 14, 2018	Wichita	Water and Wastewater System Workshop	w/ww
September 19, 2018	Beloit	Competent Person For Trenching and Excavation	w/ww
September 20, 2018	Beloit	Confined Space Entry	w/ww
October 2, 2018	Grandview Plaza	Wastewater System Operations - Lagoon Maintenance	ww
October 4, 2018	Oberlin	Wastewater System Operations - Lagoon Maintenance	ww
October 9-12, 2018	Newton	Cross Connection - Backflow Prevention	w
October 16, 2018	Independence	Chloramination Disinfection	w
October 16, 2018	Emporia	Emergency Preparedness, Tabletop Exercise	w
October 17, 2018	Park City	Emergency Preparedness, Tabletop Exercise	w
October 18, 2018	Pratt	Emergency Preparedness, Tabletop Exercise	w
October 18, 2018	Tonganoxie	Chloramination Disinfection	w
October 23-26, 2018	Hays	Cross Connection - Backflow Prevention	w
October 24, 2018	Manhattan	Competent Person For Trenching and Excavation	w/ww
October 25, 2018	Manhattan	Confined Space Entry	w/ww
November 1, 2018	Hays	Installation of Tracer Wire Proper Line Locating	w/ww