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Abstract

The City of Bridgeport (the City) retained Schneider Engineering, Ltd. (SE) to complete a Cost of Service and Rate Study for their water and wastewater systems in August 2017. After reviewing data provided by the City, SE determined that the City was under recovering expenses relating to the operation and maintenance of the water and wastewater systems through their rates and tariffs during the test year. Additionally, due to the City's essential repayment to other operating funds, projected expenses, and capital improvements, SE determined that there was the potential for expenses to further exceed revenue. Considering these factors affecting Bridgeport, the City opted to pursue water and wastewater rate changes to start in April 2018.

Introduction

Starting in August 2017, the City of Bridgeport retained Schneider Engineering (SE) to complete a cost of service and rate study for the City's water and wastewater systems. Using data provided by Bridgeport, SE modeled and allocated the costs to run the City's water and wastewater departments and supported functions, including general fund transfers. The goal when building, designing, and populating the model is to appropriately allocate costs by rate class to customers on the basis of their contribution to costs inherent to running the system. Ideally, every customer pays their share of costs associated with serving their particular load.

Background & Project Scope

When Bridgeport contracted with SE to complete the cost of service and rate study, several objectives were laid out to be completed over the course of the study. These included:

- Review current rate design and determine proof of revenues.
- Align water and wastewater revenues to City budgets and capital improvement plans.
- Evaluate rate competitiveness across all rate classes.
- Design and provide rate recommendations based on financial and competitive goals identified by the City.
- Mitigate rate impact across all rate classes as much as possible.
- Ensure long-term water and wastewater system health

Each aspect of the project's scope was met, many of which were presented to the City Council at the February 26, 2018 meeting. Following discussions during the February meeting and, subsequently, with City staff, SE developed a proposed rate for all water and wastewater customers. This proposal was designed to facilitate discussion regarding rates that will meet the future needs of both the City and its customers.

Cost of Service Study

The purpose of a cost of service study is to identify and assign costs related to the electric system to specific rate classes or customers, through the input data relating to both expenses and revenues for the water/wastewater fund, and apply derived allocation factors, based on data provided by the City. The function of the expenses and allocation factors indicate from which particular customer class revenue should be generated. This, coupled with revenue data, provides insight as to which rate class is generating revenue and from which rate revenue ought to be generated.

Methodology

To complete the cost of service and rate study, the City provided data relating to water and wastewater department operating expenses, revenue from customers, comprehensive annual financial reports, and customer usage statistics. The data used to develop the cost of service study included financial account balances, financial statements, customer sales and use data, and other relevant information from the City's fiscal year ending September 2016. SE entered the financial data and usage statistics into its proprietary cost of service model to develop a comprehensive assessment of

revenue and costs statistics related to Bridgeport's three categories of customer classes. Costs that were included and evaluated in the model included:

- Wholesale water purchase costs
- Operation and maintenance expenses
- Depreciation of system components
- Repayment to other funds
- Transfers to other accounts
- Value of system components

Customer usage data, including metered gallon demand and customer counts, were key in distributing costs across the various customer rate classes.

Following the completion of the test year cost of service study, SE evaluated forecasts¹ provided by Bridgeport and made adjustments to the test year inputs and allocation factor to update model outputs based on future budgetary needs. This is a key component of the process in that it ensures the fiscal stability of the utility for the next several years. However, since FY 2002, the general trend is for the water/wastewater fund to borrow resources from other city funds to maintain safe and reliable service to Customers. This trend has resulted in approximately \$1.2M of accumulated funds borrowed by FY 2017.

This is a significant problem because excessive borrowing diverts funds from other services that benefit both the residents of the community as well as the City. In the case of Bridgeport, transfers to the water/wastewater fund from other accounts depletes funds from the following services:

- | | |
|----------------------|-----------------------|
| ▪ City governance | ▪ Swimming Pool |
| ▪ Building Inspector | ▪ Library |
| ▪ Fire Department | ▪ Civic Center |
| ▪ Police Department | ▪ Community Center |
| ▪ Municipal Court | ▪ Cemetery |
| ▪ Sports Complex | ▪ Street Department |
| ▪ Main Street | ▪ Planning Department |

Due to the current limitations placed on the City's funds, it is likely that Bridgeport is not able to provide or maintain proper support of these services should the current trend continue.

Findings and Results

Despite the benefits of transfers to other City accounts, these levels of transfers do increase the cost of water to the end consumer - the residents and businesses of Bridgeport. One of the first outputs SE reviews when analyzing a cost of service study is the Margin Above Raw Water Cost (MARWC). As the name suggests, this is the portion of the rate that goes to fund the utility, including transfers, and is not paid directly to wholesale water providers or regulatory agencies, i.e., MARWC is the portion of the rate

that supports the operation and maintenance of the system, plus any transfers from the water/wastewater revenues. Under this cost of service study, SE found that Bridgeport's MARWC was \$5.95.

In addition to the \$1.2M borrowed funds, Bridgeport has several factors that drive this number currently and will continue push it higher in the future. The first of these is that the City does not benefit from economies of scale. SE, through experience with previous cost of service studies, has found that smaller utilities generally have a higher MARWC because the large amounts of fixed costs needed to run a reliable system are spread among fewer customers. Another general trend among smaller utilities is generally higher transfer amounts, pushing up MARWC through a function of percentage of total revenue transferred. Ultimately, being a competitive utility is not about selling water at the lowest cost; it is about selling water at a reasonable cost while providing reliable service. For municipal utilities, reliable service often encompasses other functions of city government, such as police, fire, and parks. Also, the water/wastewater fund has a current bond annual debt payment of \$826,322. Municipalities often issue bonds to pay for large, expensive, and long-lived capital projects, such as roads and water treatment facilities. Although they can, and sometimes do, pay for capital investments with current revenues, borrowing allows cities to spread the costs across multiple years. In the future to help minimize the amount borrowed through issuing bonds, the City proposes to set aside \$100,000 per year from annual revenues to address recurring infrastructure projects.

In consideration of both the current and future cost factors, Bridgeport was under target for net revenue against realized costs. When conducting a cost of service study, the industry standard for evaluating revenues against cost of service allocations is within plus or minus 5% across each rate class or category, including the system total. Upon evaluation of Bridgeport's cost of service, it became clear that the Utility is under collecting appropriate revenues from the individual customer classes as defined under the cost of service study by 9.1%. To put it more simply, not enough revenue is being collected from each rate class where revenues are insufficient to cover allocated costs.

The mismatch between revenue collected and allocated costs is not necessarily bad for the Utility or customers; cost of service studies are a tool for utilities and their managers to evaluate the state of the system. With knowledge regarding how costs are allocated and from whom revenue is being generated, policy makers for a utility can better understand the system's needs moving forward. In other cost of service studies, after the evaluation of the study results, utilities have requested SE to make rate adjustments so that each rate class is paying its cost of service. For municipal utilities, cost of service is one of many tools at the disposal of the City to achieve desired goals regarding the water/wastewater system.

A cost of service study is not complete without a forward projection. Using data provided by Bridgeport, SE ran a revised cost of service study based on projected budget numbers for the water/wastewater utility, holding projected revenue, usage, and customer count constant. The results of the revised study, shown in the Fiscal Year 2018 column in Table 1, demonstrate that Bridgeport's water/wastewater utility will not have enough revenues to cover expenses if current projections hold true.

Table 1 - Base Rate/Test Rate Budget Comparison		
	FY2018 Current	FY2018 Adjusted
Water Sales	\$1,652,625	\$1,945,645
Sewer Charges	\$917,612	\$1,056,569
Other Income	\$61,947	\$61,947
Transfers In	\$412,172	\$420,891
Revenue	\$3,044,356	\$3,489,052
Salaries	\$221,852	\$221,852
O&M	\$2,575,192	\$2,575,192
Capital Outlay	\$100,000	\$100,000
Transfers Out	\$452,305	\$497,646
Expenditures	\$3,349,349	\$3,394,690
Surplus (Deficit)	(\$304,993)	\$94,362

Table 1 looks at costs and revenues by general budget categories. This is helpful in seeing specifically where costs change between the base rate revenue and projected rate revenue with the proposed rates. The FY2018 Current column in Table 1 illustrates the revenue assumptions and subsequent deficit if no rate changes were implemented, while the FY2018 Adjusted column makes the revenue adjustments and subsequent surplus based on rate changes made to incorporate budgeted capital improvement plans, borrowed funds recovery, and overall revenue neutrality. Without any future rate adjustments, the water/wastewater fund would incur a \$304,993 deficit in addition to the current \$1.2M deficit. This is due to an under collection of rate revenue from customers, needed capital improvement projects, and repayment of borrowed funds. Because projected revenue was assumed to be held steady, these costs end up showing a deficit on the cost of service study.

Moving Forward

With the completion of the cost of service and rate study initially available at the February 12, 2018 meeting, Bridgeport's City Council could begin to make initial

decisions and start discussions regarding the direction of the City’s Utility. With this information at their disposal, the Council, along with City staff, provided direction to SE regarding rates and rate design, which was further refined for the February 26, 2018 meeting.

Rate & Tariff Design

Through the cost of service and rate study, SE found several potential issues surrounding Bridgeport’s current rate and tariff structure. The two primary issues surrounded low customer charges for all customer classes and an inefficient variable rate design. At the February 12 and 26, 2018 Council meetings, SE presented these points and recommended rate adjustments to the Council.

The biggest trend in utilities today is ensuring adequate recovery of fixed costs. Yet there are rate design solutions that can help reduce financial uncertainty by ensuring greater revenue stability. For many water utilities, a larger portion of revenue recovery has historically been accomplished through its variable pricing component (price per unit of water usage), compared to its fixed pricing component (monthly customer charge). However, from a cost of service standpoint, water utilities typically incur a higher level of fixed costs compared to costs that vary with water usage. These are cost drivers such as staffing, debt service and depreciation. These costs do not typically vary with water usage. This mismatch of cost recovery is a serious problem that compounds over time.

The financially sustainable approach is to design water rates that better reflect how a utility incurs fixed and variable costs, which could mean increasing the proportion of cost recovery through fixed charges compared to volume **charges**. For Bridgeport, this problem is heavily compounded by three factors: low variable usage charges, low fixed monthly customer charges, and attempting to recover a portion of variable charges within the fixed monthly charge.

Table 2 - Residential	Usage	Water	Wastewater	Property Taxes	Billed Amount
Bridgeport	5,600	\$ 30.44	\$ 34.30	\$ -	\$ 64.74
Runaway Bay	5,600	\$ 42.04	\$ 25.40	\$ -	\$ 67.44
Alvord	5,600	\$ 42.56	\$ 27.30	\$ -	\$ 69.86
Paradise	5,600	\$ 75.01	\$ -	\$ -	\$ 75.01
Decatur	5,600	\$ 42.57	\$ 44.70	\$ 1.64	\$ 88.91
Boyd	5,600	\$ 54.70	\$ 36.90	\$ -	\$ 91.60
Jacksboro	5,600	\$ 57.21	\$ 39.48	\$ -	\$ 96.69
WWSUD	5,600	\$ 108.62	\$ -	\$ -	\$ 108.62

Table 2 demonstrates how low Bridgeport’s residential customer bill is in comparison to surround water utilities for an average customer. Ultimately, the customer charge must fit the City’s needs and goals. The downside to increasing customer charges is that it affects low usage customers considerably; because the customer charge is spread out across less usage, this subset of customers end up paying substantially more money per gallon consumed.

The other significant issue identified through the cost of service study is that the current variable rate structure is inefficient. Under the current rate structure, customers receive their first 3,000 gallons at no charge. While this may have fit the needs and customer profile of the City’s utility when the rates were originally designed, the reality is that the costs to provide water have increased at a pace greater than the pace of rate increases. During the test year for the cost of service study, the provision of this amount of usage at no charge provided to customers 57,250 mGal - over 20% of the City’s billed consumption.

Rate Change

Ultimately, rate and tariff design must fit the Utility and their customers. After careful consideration on the part of both the City Council and Staff, Bridgeport will need to decide whether any adjustments to the rates are worth any detrimental impacts. While the City is under collecting revenue in all rate classes, the greatest impact of under collection was experienced by the residential rate class. Thus, in order to achieve cost of service-based rates, residential customers must experience a significant increase on their average monthly water/wastewater bill, while commercial customers should experience a lesser dollar increase on their monthly invoices at the same time. To this end, Table 3 reflects the water/wastewater rate increases SE recommended, and the City Council approved, to ensure Bridgeport is able to meet the needs of its customers today for the years to come.

Table 3 - Commercial/Residential	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Water Customer Charge	\$10.00	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Water Usage Charge	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
WW Customer Charge	10.00%	6.500%	4.750%	3.880%	3.440%	3.220%	3.110%	3.060%	3.030%	3.020%
WW Usage Charge	10.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%

*West Wise and Country Club Road rates will remain unadjusted until FY2019 as the current rate were recently adjusted.

Summary and Conclusions

Implementation of the proposed rates will position Bridgeport’s water/wastewater utility well to meet its customers’ needs over the next several years. The City is projected to meet its cost of service needs should the market and operations and maintenance costs remain relatively steady. Moreover, through decreasing and fixing wholesale water costs, Bridgeport has also been able to help offset the extent of rate increases for customers allowing it to decrease of the adverse effects due to tariff design changes. It is good policy to review and revise the cost of service study in future years to reflect changes to costs, market prices, and changes to customer behaviors. The City Council and Staff used the cost of service study as it ought to have - as one of many tools to ensure that the Utility provides reliable service at a competitive cost in a method that meets the needs and goals of the City and its residents. In doing so, the Council implicitly acknowledged that rates must be reviewed annually to ensure that the Water and Wastewater utilities do not fall again into fiscal distress.