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March 2, 2017

Mr. Robert F. Phillips, P.E.
City Engineer
City of Madison
210 Martin Luther King Jr. Boulevard
Madison, WI 53703

RE: Review of Progressive Rate Alternatives for City Sanitary Sewer Utility

Dear Mr. Phillips:

This letter contains our findings regarding our review of the City's sanitary sewer rate structure, and specifically whether a 'progressive' rate structure could be implemented that would charge higher volume rates for higher volumes of usage to residential customers in a fair and reasonable manner that would not be unjustly discriminatory. This type of 'progressive' rate structure is more commonly called an inclining block rate structure, referring to the fact that each block of usage has a higher rate per volumetric unit than preceding block.

This report focuses only on the implementation for residential customers, the use of such a structure for other classes would introduce other challenges related to fairness and equity because such customers are a less homogenous group than residential. It would be possible to implement structures for such customers, but to ensure they are fair and equitable could require the use of a more complicated rate structure.

Rate Setting Practices

While municipal utilities have great latitude in implementing sanitary sewer user charges, there are still regulatory requirements that they are bound by. The United States Environmental Protection Agency ("US EPA") has published the *User Charge Guidance Manual for Publicly-Owned Treatment Works* in 1984 ("EPA User Charge Guidance"). This document provides guidance on user charge systems for any sewer utility that has received federal funding for their utility at any time, which most legacy sewer utilities have at one point of time (e.g., federal construction grants or federally subsidized revolving fund loans). The EPA User Charge Guidance requires that costs for operating, maintenance, and replacement be recovered in proportion to customer's usage of the system.

Similar standards are typically applied to water utility rates, where it is common for utilities to use an inclining block rate structure. However, the key difference between water and sewer utilities is that water utilities are sized and constructed to meet peak demands placed on its infrastructure by peak usage, in particular peak usage that often occurs in summer to meet outdoor water demands. In the case of a water utility costs can be specifically attributed to these peak demands and an inclining block rate structure can be cost-justified based on these peak costs.

However, sanitary sewer utilities do not have these peaks placed on it by customer demand, rather the peak periods that a sanitary sewer system is sized for is commonly the result of wet-weather events, even in the case of a separated sewer system.

Industry Practice

As a part of our engagement we used data we have collected in our firm's biannual Water and Wastewater Rate Survey conducted in conjunction with the American Water Works Association. Based on data collected through that survey approximately a dozen utilities that use an inclining block rate structure for their sanitary sewer charges were identified. Based on examination of their rates, our knowledge of their rate setting practices, and discussions with utility staff, the reason for these inclining block sewer rate structures is most commonly affordability rather than the promotion of water conservation.

One example of such a rate structure is the City of Austin, Texas, home of the University of Texas and the state capital. They have a volume charge for the first 2,000 gallons of billed sewer volume of $5.35 per 1,000 gallons while any billed sewer volumes above that amount are billed at $10.35 per 1,000 gallons. Our firm has assisted the City with the development of their rates and while conservation is an important part of their water structure that consists of both a tiered volume rate and base charge, the structure of their sewer rates is driven solely by affordability concerns. The City of Kissimmee, Florida, a community just outside of Orlando and Disney World, has a similar structure, with a rate of $1.68 per 1,000 gallons for the first 2,000 gallons of billed usage and a rate of $5.79 per 1,000 gallons for usage above that amount.

Although promotion of conservation is a legitimate concern in these communities, that is not the driver of their inclining block rate structure, rather it is affordability for those on fixed income and low-income customers. However, tying affordability to low volumes of usage can be tenuous because the two do not always go hand-in-hand, in particular because low-income users may tend to have less efficient plumbing and fixtures and larger household sizes.

Madison's Sewer Rate Structure

The City's current sanitary sewer rate structure, which took effect on April 1, 2016, for residential customers with a 5/8" or 3/4" meter the monthly service charge is $12.88 plus $.40 for landfill remediation while the volume charge is $2.6709 per 1,000 gallons for all billed sewer usage. City Staff updates these charges each year using a rate model that allocates costs to functions and designs rates that are in proportion to a customer's usage of the system, in compliance with EPA User Charge Guidance.

Wisconsin Regulatory Environment

The rate setting regulatory environment in the State of Wisconsin for municipally owned water and wastewater utilities is relatively unique. The Public Service Commission ("PSC") regulates the rates of all municipal water utilities, so each time the City of Madison's water utility seeks a rate adjustment they must file with the PSC. Municipally owned sanitary sewer utilities do not have the same requirements for filing rate adjustments with the PSC, however, the PSC does have the

authority to intervene if a complaint is filed against the utility and the PSC finds cause to examine this further.

As part of our project we employed Mr. David Sheard and Mr. Andrew Behm, who are both currently employed by the engineering firm of Ruekert-Mielke, but both previously worked for the PSC. They have indicated that the PSC has been accepting of inclining block rate structures for water utilities, such as the one that has been implemented by Madison, but that is because there is a sound cost of service basis based on peak water demands that supports this structure for water rates.

If an inclining block rate structure were implemented for the sanitary sewer rates the PSC would only examine them if a complaint was files. Given the City's relatively large customer base it would seem likely some of those most impacted, those using larger amounts of water, some of them might file a complaint with the PSC and they would review such a structure. If they found merit in the complaint the first step would likely be a request from the PSC for the City to justify the inclining block structure. While some justification could be made to support such a structure, we believe it would be contrary to generally accepted cost allocation and rate making principles for sanitary sewer utilities.

Current Cost Allocations

A key component of the City's rate model that determines sanitary sewer charges is the allocation of costs between customer accounting and customer service (demand costs) and those based on usage including volume, biochemical oxygen demand, suspended solids, nitrogen and phosphorous. These allocations are documented in the City Ordinances, specifically Chapter 35.02(1)(d)9, which reads:

> *The user charge parameters determined by the regional wastewater treatment facility shall be proportioned to customers in the same fashion that it has been levied. Cost relating to rendering the bills shall be assessed against customer accounting. Cost relating to the installation and maintenance of meters necessary to measure or estimate the contribution of sewerage shall be assessed to customer service.* ***The cost relating to the maintenance of the collection system shall be generally divided sixty-five percent (65%) to customer service and the remainder to flow.*** *The cost necessary to pump sewerage shall be divided ninety percent (90%) to flow and remainder to suspended solids. Cost necessary to measure the amount of compatible pollutants contributed by individual customers shall be attributed to those parameters.* ***Depreciation of the collection system shall be distributed sixty-five percent (65%) to customer service and the remainder to flow except that the depreciation of pumping stations shall be attributed fifteen percent (15%) to customer service, five percent (5%) to suspended solids, and the remainder to flow.*** *Interest earned and miscellaneous revenues shall be distributed proportionately to the subtotal of the other expenses.*

The allocation of 65% of collection system operating and maintenance ("O&M") and capital costs shown in the bolded sentences above is a high allocation relative to typical cost allocation practices for sanitary sewer utilities. Even though it can be argued many collection system costs are fixed regardless of a customer's contribution of billable sanitary sewer flow, a greater allocation is

typically placed on the volumetric component than this and is generally accepted as being cost justified for a sewer utility.

Proposed Cost Allocations

We believe that the City could achieve some of the same objectives of implementing an inclining block rate structure by instead adjusting the current allocation of costs between the fixed service charge and volume rates. We believe it would be fair and justifiable to adjust the City's current allocation of 65% of collection system and operating costs to the fixed service charge component to a lower number.

We would recommend that the City may adjust this down to 50% of collection system O&M and capital costs to the fixed service charge component and the remaining 50% to the volume charge component (instead of the current 35% allocation). We would recommend that this change be implemented over a multi-year period in combination with other rate adjustments to minimize impacts on customers, so we would suggest a shift of 5% per year for three years starting with the 2018 rate adjustment.

After these rate adjustments have been completely implemented the City can examine its overall water and wastewater rate structure and assess if an additional shift to the volume component would be appropriate to meet its utility rate objectives.

Impact of Proposed Changes

Based on the City's rates implemented on April 1, 2016 if this change had been fully implemented at that time the volume rate would have been higher by approximately $.13 per 1,000 gallons while the fixed customer charge would have been $1.00 per month lower. This would have resulted in a reduction of $.47 per month to a typical customer billed for 4,000 gallons of sanitary sewer in a month, a 2% decrease over their current bill of $23.56 per month for sanitary sewer service. A breakdown of this typical customer bill using 4,000 gallon per month is shown below.

	Existing Rates	Rates with Proposed Changes	% Change
Fixed Service Charge (per month)	$12.88	$11.88	-7.8%
Volume Charges (4,000 gallons)	$10.68	$11.21	5.0%
Total Sanitary Sewer Charges	$23.56	$23.09	-2.0%
Percent of Bill from Fixed Service Charge	54.6%	51.4%	

For those customers who use less water, for example a retiree using 1,000 gallons per month, their monthly bill would be reduced by $.87, a decrease of over 5% compared to their current bill of $15.55.

This change promotes conservation by charging more for service to those who use more. Under this proposed methodology those using 8,000 gallons per month or more would have seen an increase in their sanitary sewer bill. For example, a residential customer using 30,000 gallons per month would

have seen an increase of $2.90 per month, an increase of over 3% compared to their current bill of $93.41.

This change also provides the benefit of promoting affordability to some extent by allowing those with lower levels of usage to see a reduction on their bill, as is illustrated in the prior example of a retiree billed for 1,000 gallons per month. However, it should be recognized that there is not a perfect correlation between low income customers and low billed flows.

A disadvantage of this change from the utility's perspective is that less of the revenue will be achieved from the fixed service charge, so there is a greater risk of revenue not meeting the projections used to establish rates.

It should also be noted that this proposed change would impact all sanitary sewer customers, we are not recommending different volume rates for difference classes, and so high volume non-residential customers would have seen a greater increase in their bills by this change compared to current rates. However, the advantage from this perspective is that it promotes conservation among those customers as well, not just among residential customers.

Conclusion

Based on industry standard cost of service principles and practices and the rate setting regulatory environment in the State of Wisconsin we do not believe it would be fair or appropriate to implement a 'progressive' inclining block rate structure for residential customers of the sanitary sewer utility. However, the utility could promote conservation through its rate structure by shifting the allocation of collection system O&M and capital costs from the fixed service change component, which is currently allocated 65% of such costs, to the volume component of rates. We propose shifting the allocation from 65% to 50% over a three year period starting in 2018 to accomplish this goal. After this shift is completed the City should examine its water and sanitary sewer rate structure and assess if they are meeting conservation and other pricing objectives and could consider a further shift in these costs if appropriate.

This proposed change will promote conservation among all customers using more than 8,000 gallons per month of water by assessing them a higher sanitary sewer bill, while also providing some benefit of affordability for those that stay under that level of usage. A disadvantage of this approach is that it makes the sanitary sewer utility's revenues less stable if billed volumes fluctuate due to climatic, economic, or other conditions.

We appreciate this opportunity to be of service to the city, if you have any questions, comments, or concerns about any of our findings, please feel free to contact me at any time.

Sincerely,

Thomas A. Beckley
Senior Manager