BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

REJOINDER TESTIMONY OF

HAROLD J. SMITH

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)
P-2020-3019019 (DSIC)

TOPICS:

Readiness To Serve
Customer Class Peaking Factors

September 11, 2020

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HJS-1Rejoinder	AWWA Manual M-1 , Chapter IV.7 titled “Revenue Stability-Fixed Charges and Other Considerations”

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME.

A. My name is Harold J. Smith.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. Yes, I prepared written direct testimony (pre-marked PWSA St. No. 7) which accompanied the March 6, 2020 rate filing package. I also prepared supplemental direct testimony (pre-marked PWSA St. No. 7-SD) which was served on May 15, 2020 and rebuttal testimony (pre-marked PWSA St. No. 7-R) which was served on August 18, 2020. The purpose of my previously served testimony was to sponsor The Pittsburgh Water and Sewer Authority's ("PWSA" or the "Authority") class cost of service study ("CCOSS").

Q. HAVE YOU REVIEWED THE REBUTTAL TESTIMONY SUBMITTED BY THE OTHER PARTIES IN THIS RATE CASE?

A. Yes, specifically I have reviewed the surrebuttal testimony submitted by Mr. Scott Rubin, representing the Office of the Consumer Advocate ("OCA") and Mr. Brian Kalcic, representing the Office of the Small Business Advocate ("OSBA").

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY?

A. In my rejoinder testimony I will address Mr. Rubin's comments regarding the approach that I used to incorporate the recovery of readiness to serve costs in the fixed minimum charge and I will address Mr. Kalcic's comments on the customer class peaking factors.

II. RESPONSE TO OCA WITNESS RUBIN

Q. PLEASE SUMMARIZE MR. RUBIN'S REBUTTAL COMMENTS THAT YOU ARE ADDRESSING.

A. Mr. Rubin points out that the reference from the AWWA M-1 Manual in my rebuttal testimony regarding the use of a readiness to serve component is contained in the chapter titled “Emerging Trends In Water Rate-Setting” and implies that the fact that this topic is addressed in a chapter about innovative approaches to rate setting means that it is not an accepted practice and therefore should not be used to develop rates for a regulated utility. (OCA St. No. 1SR at 9-10).

Q. DO YOU AGREE WITH HIS IMPLICATION THAT THE RECOVERY OF READINESS TO SERVE COSTS THROUGH A FIXED CHARGE IS NOT AN INDUSTRY ACCEPTED PRACTICE?

A. I do not and would also like to point out that the recovery of readiness to serve costs is also discussed on page 151 of the M-1 Manual in the chapter titled “Revenue Stability-Fixed Charges and Other Considerations”. See PWSA Exh. HJS-1RJ for the entire chapter.

Q. DOES THE M-1 MANUAL INCLUDE ANY LANGUAGE THAT DESCRIBES HOW READINESS TO SERVE COSTS SHOULD BE INCORPORATED INTO A UTILITY’S FIXED CHARGES?

A. Unfortunately, the M-1 Manual provides very little direction with respect to the proper methodology for incorporating readiness to serve costs in the fixed charge; however, the following language from page 97 of the 7th Edition of the M-1 Manual (emphasis added) certainly implies that it is acceptable to allocate a portion of a utility’s debt service costs such that they will be recovered through the fixed charge.

> Similarly, “readiness to serve” charges perhaps connote something more comprehensive than simple “base charges” in conveying the incurrence of fixed costs to service customer accounts. Both terms relate to charges that aim at capturing the costs of having a system in place to provide water to the customer regardless of whether the customer consumes any water in a given service period. Common inputs for both charges include costs such as
>
> - billing costs (meter reading, mailing bills, accounting, collecting, and customer service),
> - debt-service cost (**allocating at least a portion of the annual utility debt service**), and
> - fire protection (allocating public fire protection costs for the oversizing of distribution facilities).

III. RESPONSE TO OSBA WITNESS KALCIC

Q. PLEASE SUMMARIZE MR. KALCIC'S REBUTTAL COMMENTS TO WHICH YOU ARE RESPONDING.

A. Mr. Kalcic proposes three modifications to the water CCOSS which are related to the use of two years of data to develop customer class peaking factors. (OSBA St. No. 1-SR at 4-5). Raftelis updated the retail classes Maximum Month to Average Day factors to use two years of data instead of three in Rebuttal Testimony. However, Mr. Kalcic proposes the following changes be made in addition to the retail factor modifications made by Raftelis:

- Update the system maximum day and peak hour factor (Tab COS>Allocations)
- Update the system maximum day to maximum month ratio (Tab COS>UnitsW)[1]
- Update the wholesale maximum month to day ratio (Tab COS>UnitsW)

Q. DO YOU AGREE WITH THE MODIFICATIONS TO THE WATER CCOSS PROPOSED BY MR. KALCIC WITH REGARDS TO USING TWO YEARS OF DATA FOR ALL COST ALLOCATION AND PEAKING FACTORS?

A. While I do not disagree with Mr. Kalcic's recommendations, the net impact of making these three changes to the CCOSS is negligible and PWSA has elected not to incorporate them into the CCOSS.

IV. CONCLUSION

Q. DOES THAT COMPLETE YOUR REJOINDER TESTIMONY?

A. Yes.

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[1] This change was originally proposed by OCA Witness Rubin but, in his rebuttal testimony, he withdrew the adjustment since the resulting impact was negligible. (OCA St. No. 1SR at 8, n. 3)

Chapter IV.7

Revenue Stability—Fixed Charges and Other Considerations

To maintain financial viability, water utilities in North America need to address the rising cost of capital improvements, operations, and water resources. They also need to address year-over-year revenue volatility and long-term revenue erosion due to changes in metered demands over time. Wet weather, conservation efforts, and general economic conditions can make it difficult to accurately project metered demands. Significant deviations in the metered demands can mean revenue shortfalls or surpluses.

One of the more common means of stabilizing revenues from water rates is increasing the portion of rate revenues recovered by fixed charges through rate design. Cost-of-service rate designs typically include both a fixed and a variable charge. The fixed charge portion of a customer's bill will be the same, or fixed, for each bill regardless of the amount of water the customer uses. Unless stated otherwise, the fixed charge is the minimum bill an active customer will be charged. Variable charges, often referred to as *consumption charges*, are the rates applied based on the amount of water a customer uses. As described throughout this manual, these charges can take many forms.

GENERAL CONSIDERATIONS

Recently, water sales in many parts of North America have been declining. Reasons for this drop in sales include: more environmentally conscious customers; higher wastewater charges that are tied to water use; increased regulatory pressures that encourage programmatic conservation; installation of more efficient fixtures, particularly in new homes; and the recent economic downturn. The appropriate pricing mechanism to address changes in revenues from declining sales can vary depending on whether the declines are considered long term in nature or more temporary. Examples of long-term declines include

- conservation that results in physical changes such as xeriscaping or the installation of more-efficient fixtures,
- customer price elasticity response to water and sewer rate increases or structure changes,
- economic downturns,
- demographic changes (population decrease, decline in average household size, etc.), and
- increased efficiencies in the use of water by industries or the loss of major industries in a service area.

Examples of more temporary declines include sales affected by

- changes in metered demands and supply availability due to weather patterns (extreme wet/dry year),
- changes in overall economic conditions,
- natural disasters, and
- system interruption due to aging or inadequate infrastructure.

Utilities can address revenue erosion from long-term declines in sales through proactive long-range financial planning based on demand forecasts that account for demand declines. For example, in developing rates, utility rate studies typically base projected sales on an average/normalized sales year (three- to five-year average). This exposes the utility's revenue to risks if sales continue to decline. However, if a utility calculates its rates based on worst-case annual sales, or conservatively accounts for declining demand trends in its demand forecast, this risk can be minimized. This method produces higher rates and can result in cash flows in excess of utility needs. These funds can be used to protect against short-term revenue volatility or to smooth out future rate increases. Long-term planning will enable management to proactively adjust rate structures to achieve multiple objectives, including revenue stability.

Revenue volatility derived from temporary sales declines can be addressed through reserves accumulated in anticipation of brief revenue shortfalls. In addition, these short-term sales declines can also be recovered through temporary rate adjustments and/or surcharges. Alternative methods for addressing revenue volatility are listed at the end of this chapter.

In light of the decreased predictability and increased volatility of the variable or consumption portion of water-rate revenues, many utilities are looking to increase the portion of fixed-charge revenues. The revenues that come from fixed charges can be predicted with a high degree of certainty. This section describes some of the fixed charges available and other rate-making considerations that can be used to stabilize a utility's eroding revenue stream. Chapter IV.8 specifically discusses fire protection charges, which are also a form of fixed charges.

A cost-of-service approach to setting water rates results in the distribution of costs to each customer or customer class based on the costs that each causes. A dual set of fees—fixed and variable—is an extension of this cost-causation theory. For example, a utility incurs some costs associated with serving customers irrespective of the amount or rate of water they use. These types of costs are referred to as *customer-related costs* and typically are expenses that would be recovered through a fixed charge. These costs are usually recovered on a per-customer basis or some other nonconsumptive basis. Regardless of the level of a customer's consumption, a customer will be charged this minimum amount in each bill.

Utilities also incur costs associated with providing for a given amount of demand. As described in chapter III.1, these costs may be categorized as base-extra capacity costs, or commodity and demand costs, depending on the cost allocation method used. Regardless of the allocation method selected, a utility incurs these costs because of the amount and pattern of its customers' water demands. For various reasons, it has become common practice in the water industry to recover such costs, even those defined as fixed in traditional cost-accounting terms, through a consumption charge that varies with the customer's consumption.

Fixed and variable charges, as defined for rate design in a cost-of-service water-rate analysis, depart from standard or traditional accounting definitions of fixed and variable costs. A traditional cost-accounting definition considers fixed costs as charges that do not change in total as the volume of activity changes. In contrast, variable costs are those that do change in total as the volume of activity changes as measured in a specific time period. Notably, over the long run, a utility may be able to control fixed costs by avoiding constructing additional units of capacity resulting from water conservation/declining demands. Consequently, over the long run, fixed costs can be viewed as at least partially variable. Water utilities can use these concepts in somewhat different ways, as described in the following sections.

FIXED CHARGES

Water utilities use many different types of fixed charges in their rate designs. Three commonly used fixed charges are billing (or customer) charges, service (or meter) charges, and minimum charges.

Billing or Customer Charges

The terms *billing charge* and *customer charge* are often used interchangeably. This charge typically recovers costs such as meter reading, billing costs, and other costs that the utility incurs equally per customer or per account. This type of fixed charge can be the same for all customers or it can vary by customer class if certain customer classes have more complicated billing or customer service requirements. These costs are not a function of the amount of consumption a customer uses. An example of a billing or customer charge is $6.00 per bill.

A billing charge is relatively easy to calculate, implement, and understand. A billing charge is frequently lower than other types of fixed charges (or represents a relatively small component of a larger overall fixed charge).

Service or Meter Charges

A *service charge* (or *meter charge*) is a fixed fee that increases with meter size. It often recovers the same costs as a billing charge plus other customer-related costs that change as a function of meter size. These other costs typically include meter-related costs such as meter testing, repairs, and replacements.

Table IV.7-1, based on inside-city unit costs of service from Table III.2-5, shows an example determination of a schedule of monthly service charges. Because service charges vary by meter size, they may be more complicated to explain and require additional data to allocate costs to each meter size in a fair and equitable manner.

In some cases, utilities include other costs to provide service to a customer as a part of a service or meter charge. The argument is made that utilities make investments to provide the ability to serve, and that these costs must be recovered regardless of the amount of water used during a given period. This is sometimes referred to as a readiness-to-serve

Table IV.7-1 Fixed charges by meter size

Meter Size, in.	Billing and Collection,* $	Meters and Services,† $	Total Meter Charge, $
⅝	5.80	6.46	12.26
¾	5.80	9.70	15.50
1	5.80	16.16	21.96
1½	5.80	32.32	38.12
2	5.80	51.72	57.52
3	5.80	103.44	109.24
4	5.80	161.62	167.42
6	5.80	323.25	329.05

*From Table III.2-5, rounded to nearest cent.

†Based on inside-city unit costs of service in Table III.2-5 as follows: $77.5793 per equivalent meter per year divided by 12 bills = $6.465 per equivalent meter per month. Meter equivalents based on appendix B.

charge. An approach that may be useful in establishing a cost basis for readiness-to-serve costs is referred to as the minimum system analysis. This analysis considers that there is a minimum system in place to meet minimum service requirements regardless of use. The minimum needs are defined by determining the minimum size a system would be designed to meet minimum or average service needs (e.g., 4-in. service) not considering sizing for peak-day capacity needs or fire protection. The percentage of the distribution system related to meeting the minimum system needs would be applied to distribution-related costs and would be collected in the fixed charges. Incremental system sizing related to sizing the system to meet peak-day needs and fire flow requirements may also be considered for inclusion in the fixed charges. Fire protection charges are discussed in more detail in chapter IV.8. The requirement to recover costs without regard to the volume of sales is real, but it does not necessarily suggest that fixed charges should represent a large portion of total revenue requirements, nor that the rate structure should match the cost structure of a utility. The use of a water system is reflected in both potential and average usage patterns, so a continued reliance on volumetric charges to recover fixed costs has value from an equity perspective.

The extent to which a strategy of large service charges is employed is frequently limited as a result of concerns over impacts on affordability for smaller-volume customers.

Minimum Charges and Water Allowance

A minimum charge is equal to the sum of the fixed-fee components of a water bill that must be paid regardless of metered usage. A minimum charge could consist of a billing charge, or a billing charge plus a meter charge. In some cases, a fixed fee based on an allowance for a certain amount of water consumption is included in the minimum charge. The allowance is the minimum volume of consumption for which a customer is billed regardless of whether or not the water is used. The allowance is generally set at a relatively low level to equal an amount that is typically used by most customers in a month. Some utilities use an increasingly larger water allowance for larger size meters.

The minimum charge may be viewed as a means to recover a portion of fixed costs associated with investments to which all customers should contribute, because the utility continues to incur the fixed costs regardless of whether customers consumed water during that billing period.

This charge typically recovers the same costs as the billing and service charges, plus the cost of the allotted consumption allowance, multiplied by the consumption rate.

Table IV.7-2 Fixed charges—Minimum charge

Meter Size, in.	Meter Charge, $	Water Allotment,* $	Total Minimum Charge, $
⅝	12.26	5.62	17.88
¾	15.50	5.62	21.12
1	21.96	5.62	27.53
1½	38.12	5.62	43.74
2	57.52	5.62	63.14
3	109.24	5.62	114.86
4	167.42	5.62	173.04
6	329.05	5.62	334.67

*This charge includes consumption of the first 2,000 gallons.

For example, if a utility had a service charge of $12.26 per equivalent ⅝-in. meter and a consumption charge of $2.81 per thousand gallons (based on the residential cost per thousand gallons as displayed in Table IV.2-2) and it wanted to set a minimum charge that included 2,000 gallons, the minimum charge would be $17.88 per equivalent meter ($12.26 + [2 × $2.81]). Table IV.7-2 shows how to calculate a minimum charge by meter size. This example assumes the service charges presented in Table IV.7-2 and a consumption charge of $2.81 per thousand gallons for all meter sizes.

Minimum charges generally result in the highest fixed fees of those fees discussed herein. Often they are criticized for being unfair in that they charge a customer for consumption even when the customer does not use the allotted amount of water.*

It is often assumed that a minimum charge adds to the utility's revenue stability. However, if the consumption allotment for a minimum charge is set at a low level, a utility may actually receive little benefit in terms of revenue stability. The amount of revenue generated from the consumption component of the minimum charge is revenue that, for the most part, would normally be generated from water sales using the consumption charge.

OTHER CONSIDERATIONS

Many utilities have adopted a water rate structure that is heavily weighted on volume charges. This discourages wasteful use by implementing a "the more you use, the more you pay" price signal. Relying solely on volumetric rate increases to implement conservation efforts can increase the risk of revenue erosion and increase revenue volatility. Upward adjustments to volumetric rates to recover lost revenues exacerbate declining sales and can expose the utility to affordability concerns (see chapter V.4 for discussion of utility rate affordability).

Balancing revenue stability with policy objectives like conservation is an important consideration when deciding the level of fixed charges. Because conservation rates are designed to encourage more efficient water use by charging higher rates (consumptive charges) for discretionary uses, the drop in revenues, in some cases, may be greater than the drop in water sales. For example, a 10 percent drop in sales may result in a 20 percent drop in revenues if the reduced sales come from the higher priced water. Mitigating this

* In some instances, legal challenges have been threatened by users of systems with usage allowances. The challenges result from the argument that the customer is charged for a certain amount of water regardless of whether the amount of water is used. Under this line of reasoning, the minimum charge can be argued to violate cost-of-service principles. To avoid legal challenges, a utility may determine that it is best suited by not including a usage allowance.

volatility through increased fixed charges may reduce the effectiveness of the conservation efforts and the level of water conservation.

Many utilities across North America are prohibited from eliminating rate structures with customer conservation pricing signals, even if they have identified a need for additional revenue stability. However, there are several established approaches that can protect utilities from the impacts of revenue swings even under the most aggressive conservation pricing strategies.

Alternative methods for addressing revenue volatility including the following:

- **Temporary pricing adjustments and surcharges.** As discussed later in chapter V.3, a surcharge is a charge separate from existing permanent rates and is usually implemented to collect a target amount of revenue. Rate surcharges can be a reactive yet effective tool for meeting short-term revenue shortfalls. Notably, these price changes tend to have a twofold effect: while gleaning additional revenue, it can also strengthen the pricing signal to conserve water if applied volumetrically.
- **Reserve funds.** Many utilities manage revenue volatility by funding special reserves that can be used to stabilize temporary revenue shortfalls. Rate stabilization funds are common and provide a source of funds to meet debt-service coverage covenants. Funding for the reserves is included in the utility cost of service and collected through rates or funded from additional funds generated in years where revenue exceeded budget expectations (e.g., dry weather year).
- **Conservative water sales projections in rate-making.** In developing rates, utility rate studies typically base project sales on an average/normalized sales year (three- to five-year average). This exposes the utility's revenue to risks as sales decline in response to both conservation-rate pricing signals and adverse weather. However, if a utility calculates its rates based on worst-case annual sales, this could minimize the risk. This method produces higher rates; thus, it has been suggested that utilities adopting the conservative approach also implement a customer "dividend" program. This program would return some of the funds that may be collected in excess of the utility's revenue requirement. Alternatively, more frequent rate analysis can be completed to adjust rates based on actual water sales if estimates were too conservative.
- **Ratchets.** This method uses the individual customer's peak monthly use to set the customer's base/fixed charges as a financial incentive for conservation (Woodcock 1995). It encourages customers to reduce their peak water use and lower their monthly bills (Eskaf et al. 2014). This alternative method can be burdensome for utility administrations. Thus, recalculation of the customer's base/fixed charge should be infrequent enough to reduce the utility's burden yet frequent enough to permit the customer to realize the benefit of managing water use. Because the increased fixed charge targets customers with high monthly demand, it helps the utility stabilize revenue while still sending the desired price signal.

SUMMARY

In designing rates, there are a number of options that can provide increased revenue stability to a utility. The option selected should be primarily determined based on the underlying cause of revenue erosion or volatility and whether that cause is long term or short term in nature. There are secondary concerns that should also be considered, such as the trade-off between affordability (which is naturally facilitated by low fixed charges) and revenue stability (which is naturally facilitated by high fixed charges). There is also a trade-off between conservation objectives and revenue stability—it is more difficult to send conservation-oriented pricing signals if fixed charges are high. These trade-offs must be carefully considered and balanced by utility staff and policymakers to achieve alignment with the policy objectives of the utility and its stakeholders.

REFERENCES

Eskaf, S., J. Hughes, M. Tiger, K. Bradshaw, and S. Leurig. 2014. Measuring and Mitigating Water Revenue Variability. Ceres and Environmental Finance Center at the University of North Carolina at Chapel Hill.

Woodcock, C. 1995. Social Rate Making: Has the Time Come? Presented at New England Water Works Association Annual Conference, September 18, 1995.

VERIFICATION

I, Harold J. Smith, hereby state that: (1) I am a Vice President of Raftelis Financial Consultants, Inc.; (2) I have been retained by The Pittsburgh Water and Sewer Authority ("PWSA") and am authority to present testimony on its behalf; (3) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (4) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Dated: September 11, 2020

Harold J. Smith, Vice President
Raftelis Financial Consultants, Inc.