

THE WEST VIEW WATER AUTHORITY

2024 *Cost of Service* & *Rate Design*

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INTRODUCTION

This report discusses the analysis, findings and results of the 2024 pro forma cost of service (COS) and rate design (RD) studies for the West View Water Authority (“Authority”). This report also discusses the billing, metering and loads analyses performed to complete the COS and RD. These studies are meant to be used for revenue / rate increases and rate design in 2024.

This study is based upon projected Fiscal Year 2024 operations and has been prepared to assist the Authority in its normal budgetary and financial management procedures as well as the development of potentially planned rate increase and rate design that reflects increased operating costs and capital expenditures.

The revenue requirement for Fiscal Year 2024 is addressed, followed by a discussion of the rationale employed for the current and forthcoming cost of service studies, including a description of the cost of service allocation process. The rate design process is described and proposed rate schedules are set forth in this report. The revenue requirement projections, cost of service analysis, and rate design development are conducted for the total West View water system.

GENERAL COST OF SERVICE DISCUSSION

The cost allocation process used for the present study is the same as that used in prior studies developed for the Authority, namely, the "Base-Extra Capacity Method" as set forth by the American Water Works Association in its Water Rates Manual No. M1. This methodology identifies costs and allocates them to the functional cost categories of base cost, extra capacity cost maximum-day, extra capacity cost maximum-hour, commercial customer costs, customer meter cost, customer service costs, and fire hydrant cost. These functional costs are the same as those utilized in the prior studies and may be briefly described as follows:

- Base costs include those costs which would generally be incurred if the water system were operated at a uniform volume level year-around and customers received water on the same basis.
- Extra capacity costs include those costs related to peak levels of water use in excess of average requirements.
- Customer costs include those costs associated with connecting and serving customers regardless of the volume of water used or demand requirements.
- Fire hydrant costs include those costs exclusively related to hydrants.

The costs of the water utility are assigned to the several functional cost categories through the use of allocation factors which are developed for each item of operating expense, debt service, capital expenditure, and other costs. Once the cost of service has been determined by functional cost category, the next step is the allocation of such costs to the customer rate classes.

Customer classes, or customer groups, are the groupings of those customers who have

similar service, consumption, and demand characteristics. This present study identifies and analyzes the following groups: residential, commercial, industrial, municipal, resale, and fire protection service.

The proper allocation of the cost of service requires that each customer group be charged with a portion of the base cost, the extra capacity cost, the customer cost, and the fire hydrant cost in accordance with their respective needs and use of the service rendered. This is accomplished by allocating the functional costs to each customer group in the proportion that each respective group bears a responsibility for the costs relative to the total cost responsibility of all customers served by the system. The sum of all functional costs attributable to a customer group is the total cost of service to be recovered from that group.

The base, extra capacity, customer, and fire hydrant costs, when summarized by customer groups, define the total cost of service to be recovered from each customer group. This summation also provides identity of the responsibility of each customer group for each of the functional costs which together constitute the total cost of service.

REVENUE REQUIREMENT

The initial step in the establishment of the cost of service responsibility by class, rates and charges for water utility service is the development of the annual revenue requirement. This is the amount of revenue required by the Authority to cover all costs of serving customers plus a reasonable margin on the annual level of debt service (interest expense plus sinking fund)

commensurate with municipal utility systems of similar risk and a level of funding that meets the covenants of the bond indenture plus capital fund reserves for unforeseen project needs.

Publicly-owned water utility systems are not generally operated on a profit making basis. Their annual revenue requirements are usually established on a cash basis, that is, on the basis of the annual cash amounts needed to meet all operating and capital requirements, including retirement of outstanding debt, requirements for debt and capital reserves, and debt coverage as described above. The essence of the cash basis is that the revenues of the water utility must be sufficient to cover all cash needs for the period over which the rates are intended to be adequate. The cash basis is an extension of the cash-oriented budgeting and accounting system traditionally used by governmental entities.

The total annual revenue requirement for a publicly-owned water utility should be sufficient to guarantee the provision of adequate water service and to assure the maintenance, development, and perpetuation of the water system. The principal components of the revenue requirement for a publicly-owned water system comprise operation and maintenance expenses; debt service requirements including principal and interest payments and “safety margin” for bonded long-term debt; and routine capital expenditures and reserves for plant replacements and normal extensions and improvements. Secondary components may include payments in lieu of taxes; surplus or unappropriated earnings funds; and, appropriations for major capital improvements. For purpose of this study, the Fiscal Year 2024 revenue requirement has been projected based primarily upon the Fiscal Year 2024 Budget.

Schedule 1 sets forth operation, maintenance and administrative expense data by labor and non-labor categories, as contained in the Fiscal Year 2024 Budget. The total budgeted 2024 operating expenses, inclusive of operation, maintenance, and administrative expenditures, as set forth on Schedule 1, may be summarized as follows:

<u>Expense Classification</u>	<u>Amount</u>
Source of Supply	\$ 279,000
Pumping System	6,935,500
Purification System	4,367,000
Distribution System	11,631,950
Commercial	2,755,500
General	9,165,500
Administrative	<u>49,800</u>
Total	\$35,184,250

To properly allocate labor-related general expenses such as pensions, benefits, and payroll taxes, the projected water system operation and maintenance expenditures must be categorized according to labor costs and all other costs.

The estimated 2024 operating expense of \$35,184,250 represents 74% of the 2024 total revenue requirement of \$47,718,500. Additional components of the revenue requirement include debt service payments on long-term bonds, deposits to the Capital Expenditures Fund, and deposits to the Surplus Fund.

The projected annual debt service for 2024 on the outstanding bond issues is \$7,675,729. It is important to be able to relate the debt service payments to specific categories of plant in service to properly allocate debt service to the functional costs defined in the cost of service analysis.

In accordance with the various Bond Trust Indentures, an annual deposit of at least ten percent (10%) of gross revenue is required to be made to the Capital Expenditures Fund. Additional deposits may be made if they are being accumulated for a specific capital project. Fiscal Year 2024 deposits to the Capital Expenditures Fund (referred to as capital reserves above) have been projected at \$4,771,850, which is 10% of the revenue requirement for 2024 stated above. The application of the projected Fiscal Year 2024 deposit to the Capital Expenditure Fund (“CAPEX”) has been assigned to plant categories based upon a review of available historical data together with an analysis of projected expenditures and is considered to be representative for the purposes of this study. The classification of the CAPEX for 2024 allocation is 30% (\$1,431,555) for treatment plant and 70% (\$3,340,295) for distribution mains. They are the functionalized by base, extra, and customer costs on Schedule 6. The capital expenditure breakdown by plant category is required for input into the cost of service model.

The final component of the projected 2024 revenue requirement is the deposit to the Surplus Fund. Historically, the Authority's Surplus Fund deposits have averaged approximately 2.5 percent of operating revenues. Surplus funds or unappropriated earnings may be viewed as a provision for contingencies. They are the excess of revenues above expenses and, while not necessarily designated for a specific purpose, are an important and needed component of the total

revenue requirement. For purposes of this study, the projected 2024 Surplus Fund deposit has been estimated at \$86,671. Whereas this value is substantially less than 2.5% of operating revenues, the debt service coverage ratio is 1.63, or, 63% more than the funds required for the 2024 \$7,675,729 debt service. The debt service coverage ratio from the previous 2021 COSS/RD was 1.65 and 1.58 for 2018. This level is mainly due to the CAPEX reserve payment in addition to the \$86,671 surplus deposit and remaining surplus fund. The CAPEX value of \$4,771,850 + \$86,671 (surplus fund deposit) + \$7,675,729 = \$12,534,250; dividing this value by 2024 debt service of \$7,675,729 = \$12,534,250 / \$7,675,729 = 1.63.

The total 2024 revenue requirement has been projected at \$47,718,500 and is summarized as follows:

Operation and Maintenance	\$35,184,250
Debt Service Requirements	7,675,729
Capital Expenditures Fund Deposit	4,771,850
Surplus Fund	86,671
Total Revenue Requirement	\$47,718,500

Schedule 2 sets forth the allocation of the projected Fiscal Year 2024 revenue requirement based on the Authority's annual budgets. It is estimated that the \$47,718,500 revenue requirement, after deduction of operating expenses in the amount of \$35,184,250 will provide a debt service coverage ratio of 1.63, which is essentially the same relative to the 2021 1.65 ratio from the previous cost of service study. This estimated coverage ratio is still substantially greater than the required 1.10.

It is noted that the \$45,718,500 projected revenue requirement represents a very moderate 1.02% increase \$873,327 above the reported actual Fiscal Year 2023 revenue of \$44,845,173 from water sales only (excludes other revenue).

As subsequently discussed herein, this study results in the allocation of the \$47,718,500 total revenue requirement shown above to the several customer classes. Comparison of the allocation results with the relative revenue levels received from each customer class indicates the degree to which each customer class is meeting its cost responsibilities and provides guidelines for use in rate design.

WATER PRODUCTION/SYSTEM DELIVERY

A necessary step in a water cost of service allocation study is the development of the appropriate allocation factors for the functional cost elements. Hence, it is necessary to determine the system-wide water production and delivery on average day, maximum day, and maximum hour bases. The “maximum” day and hour ratios are used to assigned costs to service peak demands, which are much higher than average demands. Detailed analysis of the water production records maintained by the Authority for many years indicated that a maximum day to average day ratio of 1.50 times is reasonable and appropriate for use in the functional cost allocations. This means that for costs allocated on a maximum day basis, 66.67 percent of the cost is assigned to the Base Cost function, while 33.33 percent of the cost is assigned to the Extra Capacity Cost - Maximum

Day function.

In order to determine total system delivery on a maximum hour basis, maximum hour releases from distribution storage have been estimated in terms of maximum day delivery from the treatment works. For the purpose of this study, the maximum hour total system delivery, including releases from distribution storage, is conservatively taken to be about 1.5 times the maximum daily rate. Accordingly, the ratio of maximum hour to average day becomes 2.36 times. This means that for costs allocated on a maximum hour basis, 42.37 percent of the cost is assigned to the Base Cost function, while 57.63 percent of the cost is assigned to the Extra Capacity Cost - Maximum Hour function.

The 1.50 maximum day to average day ratio and the 2.36 maximum hour to average day ratio taken together allow for the calculation of a three-part allocation factor. This factor recognizes base cost and both maximum day and maximum hour functions. For cost elements allocated with this three-part factor, 34.97 percent of the cost is assigned to the base cost function, 17.48 percent of the cost is assigned to the Extra Capacity - Maximum Day Cost function, and 47.55 percent of the cost is assigned to the Extra Capacity - Maximum Hour Cost function.

A brief description of the use of the allocation factors developed herein is presented in the following report section.

APPLICATION OF FUNCTIONAL COST ALLOCATION FACTORS

Three functional cost allocation factors have been discussed in the previous report, a maximum day factor, a three-part factor, and a maximum hour factor. These three factors allocate costs to the Base Cost function and the Extra Capacity Cost - Maximum Day and/or Maximum Hour functions. In addition to these three factors, twelve other functional cost allocation factors are utilized in the cost of service analysis. Six of these additional factors allocate costs only to one specific cost function - either Base Cost, Extra Capacity Cost - Maximum Hour, Customer Cost - Commercial, Customer Cost - Meters, Customer Cost - Services, or Hydrant Cost. An additional factor is used to allocate purchased power costs to the base, maximum day, and maximum hour functions in order to recognize the demand element in purchased power costs. Similarly, another factor is used to allocate distribution storage costs to the base, maximum day, and maximum hour functions in order to recognize the use of distribution storage facilities. Four additional factors are used; these result from a weighting of other cost allocations. A brief description of the application of the functional cost allocation factors follows, while subsequent report sections illustrate their actual use.

Essentially, all costs related to operating labor and operation supplies and expenses are allocated by the Base Cost factor, as these costs are incurred regardless of fluctuations in water usage. Costs related to commercial operations, meter maintenance, service maintenance, or fire hydrants are allocated by the corresponding Customer Cost or Hydrant Cost factor. Generally, costs related to maintenance labor and maintenance supplies and expenses are allocated by one of the

multi-part allocation factors discussed in the prior report section because the incidence of maintenance is dependent upon the frequency of use. Generally, maintenance costs related to the supply works and the purification and treatment systems are allocated by the base/maximum day factors, since maximum day usage is the controlling extra capacity factor. Maintenance costs related to pumping equipment are allocated by the base/maximum day/maximum hour factor pumps contain elements in their design requiring both maximum day and maximum hour factors. Distribution system maintenance costs are also allocated by the base cost/maximum day/maximum hour factor, since mains meet not only maximum hour demands, but also maximum day demands and base load requirements. Capital expenditure and debt service costs are allocated in a manner generally similar to the allocation of maintenance costs. Costs related to items not specifically noted above, such as general expenses, are allocated based on a weighting of other cost allocations. The allocation methodology discussed in the preceding parallels that used in prior studies for the Authority.

WATER CONSUMPTION/BILL ANALYSES

In order to develop the various factors needed to allocate functional costs to the customer groups and to allow for proof of revenues and rate design, a summary of customer group water usage by meter size and consumption level is required. Such a summary is known as a billing analysis / bill frequency distribution and contains billing and consumption data for an entire twelve-month period to account for the effects of any seasonal variation in consumption patterns.

An electronic copy of the complete history of calendar year 2022 billing transactions was obtained from the Authority. Information contained in the electronic copy included account numbers, class types, revenue codes, meter size codes, consumption, dollar charges, and transaction codes, and volume and dollar adjustments. A detailed analysis and summary of the electronic billing data was performed for the development of revenue generation models used to determine revenue and volumes by customer group.

2022 Revenues and Volumes By Rate Class

Revenues by Class	\$	Volumes by Block and Class			
		1st	2 nd	3 rd	Total
Residential	\$24,672,152	2,383,499,430	109,545,048	9,896,000	2,502,940,478
Commercial	\$5,840,124	248,325,778	448,261,157	121,472,000	818,058,935
Industrial	\$147,291	2,450,000	12,635,000	7,661,000	22,746,000
Municipal	\$1,077,529	13,286,755	48,580,000	121,861,000	183,727,755
Resale	\$9,831,128	2,348,000	43,610,000	1,887,582,870	1,933,540,870
Total	\$41,568,224	2,649,909,963	662,631,205	2,148,472,870	5,461,014,038

Notes: Volumes are in gallons. Volumes by block are in rate blocks according to the rates schedule.

Comparing the 2022 data above from the billing master file with 2019 and comparing revenues from the billing file with booked revenues from sales shows the following:

	Volume	Revenue
Total from 2022 Billing File	5,461,014,038	\$41,568,224
2019 Volume	5,507,074,139	
2019 Revenues - Metered Sales Per Books		\$43,410,239
Difference %	-0.01%	-4.24%

The volume difference between 2022 and 2019 is -0.01%. The 2022 revenue difference between the booked revenues from water sales and the accumulated revenues in the billing master file is -4.24% or \$41,568,224 versus \$43,410,239 per books, which shows a (\$1,842,015) difference.

The comparable difference for 2023 booked versus billing file was -2.73% or about

(\$1,225,275). The actual (10 months actual and two months budget) 2023 booked revenues from water sales of \$44,845,173, which is \$1,434,934 or 3.3% higher than 2019.

The proposed rates designed and discussed below would collect required revenues from water sales with an inconsequential variance of \$3,407.

The revenue models are set forth in Schedule 3. As shown on Schedule 3, page 5, the calculated year 2023 revenue under present rates, or, proof of revenues, is \$43,619,898 which is (\$1,225,275) less than the \$44,845,173 water sales revenue reported as received in 2023 per books. This amount represents a difference of -2.73%.

Based on the 2023 bill analysis data set forth on Schedule 3, customer group consumption levels are as follows:

<u>Customer Group</u>	<u>Thousand Gallons</u>
Residential	2,502,940
Commercial	818,059
Industrial	22,746
Municipal	183,728
Resale	<u>1,993,541</u>
Total	5,461,014

Note: Fire protection water volume, which is not metered, was estimated to be 1% of water sales or 54 million gallons in addition to the 5,461,014 gallons as shown above.

The relative consumption levels set forth above are used in the development of customer group allocation factors. The use of these factors and the cost of service allocation for the water system are discussed in the following section. Additionally, fire protection hydrants (non-metered volumes) were imputed a level of water volume of 1% of total system sales volumes or approximately 54 million gallons.

COST OF SERVICE ALLOCATION

Use of the 2022 Load Data Study

The primary cost causation for all customer classes for both operating and capacity costs (or variable and fixed cost) is driven by the volume and pattern of water usage. The pattern of water usage is critical for determining the relative contributions to peak demand by the customer classes, that, in turn, drive capacity needs to serve and costs. The 2022 load research study using 2022 customer demand data was performed for the Authority allows the COSS to allocate costs based on the Authority's actual customer usage patterns, rather than using consultant judgment, inferences based on volumes, and rules of thumbs available from the AWWA M1 Manual. In this case, this was not a typical load research study as usually electric, gas and water hourly load research usually involves a small but statistically significance sample of few hundred up to a few thousand customers for huge electric utilities. Their loads by customer type are recorded hourly then averaged to develop typical hourly load shapes. The Authority has data on all of its customers rather than a sample, except for a few that had meter problems (certain to happen with 65,000 customers recording every hour for a year) due to their recently installed SENSUS AMR system.

Residential usage patterns have been changing (declining) for years with water volume attrition occurring due to customer's behavior toward saving water and the installation of water-saving devices (low-flow showerheads and faucet aerators, horizontal-axis cloth washing machines, ...). The 2014 Water Research Institute (of the EPA) Report, "Defining a Resilient Business Model

for Water Utilities,” states on page 83:

“Literature on water use trends shows a convincing trend of increasing water use efficiency across the country. A look at four end use studies since 1995 shows that indoor residential water use was observed to be between 13.3% and 42.7% lower for a family living in a highly efficient new home (DeOreo and Mayer 2012). In another study, when controlling for weather and other variables, households in 2008 used nearly 12,000 gallons less annually than an identical household in 1978 (Rockaway et al. 2011). The overwhelming evidence, from research presented both here and elsewhere, supports a general trend of decreasing water consumption over the last decade, although regional differences may exist.”

These changes cause volumes to decline but exacerbate the ratio of peak water demand to overall volumes. Many weather-sensitive end-uses of water, especially outdoor uses, such as lawn irrigation, swimming pool filling, and outside cleaning, where there is little if any innovation in water efficiency equipment, use the same volume of water while indoor usages decline. At a national average of 58% of total residential usage, outdoor water use represents the majority of overall residential water use in a home. As indoor usage declines and outdoor usage does not decline nearly as fast over time, plus the added issue of differences in regional weather patterns, it is critical to obtain and use the actual customer load patterns of the Authority (and for any utility) to accurately allocate costs, especially capacity costs. Essentially, peaks are staying at the same level but volumes are falling.

Using the actual load shape data of the Authority's customers, the volumes from the 2022 billing analysis and the peaks from the load study are used to allocate the revenue requirement among customer classes.

The Authority's total cost of service is synonymous with its total annual revenue requirement as it is the required levels of revenues to cover all costs of serving customers. As developed herein this is the amount needed from all customers, in total, to permit the Authority to meet all operating and capital requirements including debt financing. A cost of service allocation study allocates the total cost of service, that is, the revenue requirement, among groups or classes of customers in accordance with recognized principles and generally accepted procedures in order to obtain an indication of the relative cost responsibilities of each such class of customers. A cost of service allocation study is one of a number of factors that may be considered in designing the rates and charges that generate the required revenues.

The allocation of the cost of service of the water system of the Authority to the customer classifications of residential, commercial, industrial, municipal, resale, and fire protection is set forth on Schedules 4 through 10. Descriptions of the individual schedules are given herein.

Schedule 4 sets forth in top level summary form the overall results by customer group of the cost allocation studies for the entire water system of the Authority based on the projected revenue requirement for the twelve months ending December 31, 2024.

It can be noted that the allocated cost responsibilities range from a high of 52.02% for Residential customers to a low of 0.30% for Industrial customers. The results of this allocation of costs to the users of the service, represents a reasonable guide for the development of equitable rates and charges.

Schedule 5 sets forth in summary form the results of the detailed allocations to the several Cost Functions. The Cost Functions are set forth horizontally across the top of Schedule 5, while the major expense categories -- operation and maintenance, capital expenditures, debt service requirements, administrative, and unappropriated surplus -- are set forth vertically in the far left column. The sum of the major expense categories represents the total cost of service for the twelve months ending December 31, 2024.

Schedule 6 presents the details, in tabular form, of the allocation of the estimated operating expenses and other revenue requirements for the twelve months ending December 31, 2024 to the previously defined cost functions. The far left column of Schedule 6 contains a description of the item being allocated, while the next column from the left gives the total cost of the item being allocated. The allocations to the several cost functions are shown in columns 3 through 9, while the far right column 10 headed "AC," indicates an allocation code for the specific allocation factor used to assign each cost element to the cost functions. The allocations to the cost functions were made in accordance with the theory previously discussed. The results of Schedule 6 have been summarized on Schedule 5.

Schedule 7 presents the details of the allocations of the functional costs, as developed on Schedule 6, to the customer groups. The far left column of this schedule describes the cost elements which were developed on Schedule 6, while the next column shows the total cost of the items being allocated. The allocations to the several customer groups are illustrated in columns 3 through 8, while the far right column 9 indicates the allocation codes for the specific allocation factors used in the allocation of the cost elements to the customer groups. The details of Schedule 7 have been summarized on Schedule 4.

The allocation codes referred to in the above descriptions are simply reference numbers which designate groups of percentages which are used to allocate the total amount of any given cost element to the several cost functions or customer groups. For example, the base cost portion of the various expense cost categories (indicated by the allocation code 60 on Schedule 7) is allocated on the basis of the volume of water used annually by the several customer groups. The allocation codes are identified and explained in Schedules 8 and 9. Schedule 8 contains a written description of the allocation bases and a list of the allocation codes and factors used to allocate cost elements to the cost functions. Similarly, Schedule 9 contains a written description of the allocation bases and a list of the allocation codes and factors used to allocate the functional costs to the customer groups. Additionally, it is noted that the development of allocation codes 21, 22, and 41 is set forth at the bottom of Schedule 8. These three particular allocation codes are dependent upon the maximum day and maximum hour ratios which were previously discussed.

The development of the factors used in the allocation of the functional costs to the customer groups are set forth on Schedule 10. Page 1 of this schedule illustrates the estimated consumption as well as the non-coincident maximum day and maximum hour usage by customer group. The consumption data is based on the consumption levels discussed previously, together with a 1% allowance for fire protection usage. Maximum daily and maximum hourly totals for customer groups are based on the application of customer group demand factors to the average consumption. These demand factors are conservative estimates based on a review of the system characteristics coupled with available information, experience of other studies, and professional judgment.

The maximum day and the maximum hour demands experienced by a water utility system are a result of the interaction of the individual demands of each customer using the system at that time. The total of the estimated demands represents the non-coincident demand. That is, due to diversity between groups, the sum of the individual customer group's coincidental peak requirements, which are non-coincident to the system, exceeds the coincidental peak of the system. The estimated demand factors used in these studies are considered reasonable for cost allocation purposes. The fire protection demands are based on information on maximum fire demands within the Authority's service area as reported by the Middle Department Association of Fire Underwriters.

Page 2 of Schedule 10 illustrates the development of the factors used to allocate the Customer Cost-Commercial, Customer Cost-Meters, and Customer Cost-Services functional costs to the

customer groups. These factors are based on the number of full period bills issued during the twelve months ending December 31, 2024 and the number of equivalent meters and services estimated to be in use during the 2024.

Page 3 of Schedule 10 illustrates the detailed development of the factors used to allocate the Customer Cost-Meters and the Customer Cost-Service functional costs to the customer groups.

The Customer Cost-Meters allocation factors are based on the number of equivalent 5/8" meters while the Customer Cost-Service allocation factors are based on the number of equivalent services. The meter ratios used to determine equivalent 5/8" meters are based on the relative capacity of meters by size, as recommended by the American Water Works Association. No meter cost allocations are made to the fire protection class, since the Authority has no fire meters. Equivalent service ratios are related to service line diameter and were developed by determining the minimum service line diameter required to maintain AWWA flow criteria for different meter sizes. Equivalent services are developed by applying this size ratio to the various meter sizes. For fire services, the size ratio is applied to the size of the fire service line.

OTHER REVENUE

In accordance with Trust Indenture requirements, the Authority may include other anticipated receipts and revenues, together with reasonable water rates, rents, and other charges for use of the facilities of the water system and for services rendered in order to satisfy the provisions of its Rate Covenant. Accordingly, the \$47,718,500 projected 2024 total revenue requirement may be reduced to reflect anticipated contributions from other revenue sources. For purposes of this report, it is estimated that miscellaneous revenues in the amount of \$2,454,500 will be realized from tapping fees, connections and turn-ons, sales and jobbing, billing services, and other miscellaneous sources. This estimate is based upon the review of historical data, as well as input from the Authority management. Interest on investments has not been considered as other revenue in this report. This is a conservative approach; any such interest which is earned can be utilized as a provision for contingencies or as an additional deposit to the Surplus Fund.

Schedules 11 and 12 illustrate the effect that consideration of other revenue has on the allocated revenue requirement. Schedule 11 develops the net revenue requirement by Cost Function while Schedule 12 develops the net revenue requirement by customer group. Essentially, other revenue in the amount of \$2,454,500 is credited to each Functional Cost component and to each customer group in the same percentage as the total revenue requirement. As set forth on Schedules 11 and 12, the net revenue requirement to be generated by water rates and charges is \$45,264,001. A comparison of present rate revenue with the net cost of service indications by customer group is set forth on Schedule 13.

RATE DESIGN

The Authority presently has in effect a single schedule of rates applicable to its total system. A special contract rate is in effect for Cranberry Township based upon an agreement between the parties that reduces the last (3rd) block volume rate by \$0.08 per 1,000 gallons. The form and structure of the present rate schedule will be maintained under the proposed rates; rate levels, however, will change.

The customer charge increased by 6.20% from \$8,199,002 to \$8,707,399. All fire protection rate elements were unchanged.

Having developed the proposed customer charges and fire protection charges, the rate design process next addressed the volumetric rates. A repetitive trial and error process was used to generate the total revenue requirement resulting in the development of the following volumetric rates:

<u>Block</u>	<u>Consumption Level</u>	<u>Rate Per Thousand Gallons</u>
Step 1	First 45,000 gallons/quarter	\$7.22
Step 2	Next 855,000 gallons/quarter	6.32
Step 3	Over 900,000 gallons/quarter	5.26
Special Contract Rate for Cranberry		5.18

The proposed rates and charges, designed to produce a target of approximately \$45,264,001, generates a revenue level of \$45,267,408 in revenues of net of other revenues, or 0.01% the

target, as shown on Schedule 14. A detailed calculation of the revenues generated by the proposed rates, based on the billing parameters developed from the 2022 bill analysis, is set forth on Schedule 15. Additionally, Schedule 16 sets forth a comparison of the customer group revenue which would be generated under the proposed rates with the net indicated cost of service and the present rate revenue.

The revenue levels generated by the proposed rates are in reasonable conformance with the cost of service indications, given the considerations addressed in the rate design process. It must be noted that seldom, if ever, are rates exactly in line with the cost of service indications at any given time, nor is it practical to design rate structures which are in complete exact agreement with all aspects of a cost of service allocation study. Generally, minor differences will exist just as a matter of normal circumstances. Cost of service allocations are the products of analyses based in part on judgment and experience, and their results provide a substantial aid in the design of rates. Actual rate design, in addition to relying on the results of cost of service analyses, should also include consideration of policy matters, actual budget procedures, impact of rate changes, future planning, special customer characteristics, and judicial, regulatory, and contract requirements.

A comparison of charges under present and proposed rates for several meter sizes and consumption levels is set forth on Schedule 17.

CONCLUSION

The studies discussed in this report have projected the Authority's revenue requirement for Fiscal

Year 2024 and have used this requirement as the basis for developing a proposed schedule of rates and charges to be implemented in 2024. The implementation of the rate and revenue increase herein would allow for the continuation of the Authority's financial integrity through a few future years, barring any large unforeseen expenses or unforeseen capital needs.

The studies and rate designs set forth herein, if not adopted in their entirety, can provide useful guides for the development of a system of equitable rates and charges. As noted previously, actual rate design, in addition to relying on the results of cost of service analyses, should also include consideration of policy matters, actual budget procedures, impact of rate changes, future planning, special customer characteristics, and judicial, regulatory, and contract requirements.